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Before the
COPYRIGHT ROYALTY JUDGES
Washington, D.C.

In the Matter of **Distribution of the 2004, 2005, 2006 2007, 2008 and 2009 Cable Royalty Funds**	**Docket No.**	**2012-6 CRB CD 2004-2009 (Phase II)**
In the Matter of **Distribution of the 1999-2009 Satellite Royalty Funds**	**Docket No.**	**2012-7 CRB SD 1999-2009 (Phase II)**

WRITTEN REBUTTAL STATEMENT REGARDING ALLOCATION OF THE MPAA-REPRESENTED PROGRAM SUPPLIERS

VOLUME II OF II
PRIOR DESIGNATED TESTIMONY

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DESIGNATED PRIOR TESTIMONY

TAB A

Before the
COPYRIGHT ROYALTY JUDGES
Washington, D.C.

In the Matter of		
Distribution of the	Docket No.	2012-6 CRB CD 2004-2009 (Phase II)
2004, 2005, 2006, 2007, 2008, and 2009 Cable Royalty Funds		

TESTIMONY OF JEFFREY S. GRAY, Ph.D.

Amended July 8, 2014

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I. QUALIFICATIONS

I, Jeffrey Gray, am the founder and President of Analytics Research Group, LLC ("ARG"). My firm provides expert analysis concerning economic, statistical and data issues.

I received training in economics and statistics at the University of Pennsylvania, where I earned a Ph.D. in economics. In 1991, I was appointed to a one-year position on the staff of the President's Council of Economic Advisers, where I concentrated on the economic impact of government policies and regulation. From 1993 to 1997, I served on the faculty of the University of Illinois, where I taught graduate and undergraduate courses covering survey techniques, demand analysis, labor economics, and statistics. My research has been published in some of the top peer-reviewed journals in the economics profession including *The American Economic Review*. I have received grants to pursue my research from the U. S. Department of Labor, the U. S. Department of Agriculture, and the Research Board of the University of Illinois. I have presented my research findings before a variety of seminars at universities, meetings of professional societies and conferences on specialized topics in the United States and abroad. Throughout my professional career I have been asked to serve as a referee for leading economics journals, such as *The American Economic Review* and the *Review of Economics and Statistics*, concerning the appropriate application of economics and statistics.

I have served as a consultant for companies, law firms, and government agencies on a variety of economic and statistical issues related to antitrust, copyright and patent infringement, and complex commercial disputes. My consulting work has included analyzing economic markets as well as valuing copyrighted material and assessing efficient price and advertising levels. I have been engaged by cable system operators ("CSOs") to analyze the content and viewership of certain channels and by music performance rights owners to determine the economic value of the right to perform copyrighted music. I have provided expert testimony before the Copyright Royalty Judges ("Judges"), as well as in state, federal and international courts, and have presented my research methodology and analytical findings before the Securities and Exchange Commission, the Texas Commissioner of Insurance, and the New York and Massachusetts State Offices of the Attorney General.

My *curriculum vitae*, which includes a list of my publications in the last ten years, and a list of cases in which I have testified in the last four years, is attached as Appendix A. This report is based upon information currently available to me; I reserve the right to supplement this report should additional information be made available.

II. EXECUTIVE SUMMARY

1. Programming belonging to the claimants represented by the Motion Picture Association of America, Inc. ("MPAA") consists of thousands of unique programs, many retransmitted multiple times, over the years 2004 to 2009.

These programs represented millions of valuable programming minutes retransmitted by CSOs each year.

2. This programming is valuable insofar as it is valued by CSO customers. The most direct and reasonable approach to measuring the extent to which CSO customers value programming is viewership. Program viewership therefore provides the measure of program market value, especially because the allocation of Program Suppliers' royalties in this Phase II proceeding involves examination of relatively homogenous programming. Relying upon multiple data sources and regression analysis, it is possible to estimate viewing minutes of programs on distantly retransmitted signals.

3. Following the submission of my original testimony on May 9, 2014, I received a list of program titles claimed by Independent Producers Group ("IPG") within the Program Suppliers category for this Phase II proceeding. In each cable royalty year from 2004 to 2009, approximately one-half to two-thirds of the unique program titles claimed by IPG were already claimed by MPAA. I understand that MPAA has, or will, contest the validity of these claimed representations by IPG. I also understand that MPAA will contest the validity of IPG's claimed representation of many of the remaining program titles not also claimed by MPAA. Nonetheless, for the purposes of calculating the relative viewing shares between IPG and MPAA programming, I assume that

all of the program titles claimed by IPG are validly attributable to IPG for all of the 2004-2009 cable royalty years, except that in each instance where both MPAA-represented Program Suppliers and IPG claim the same title, I attribute such a title to MPAA. I will update my calculations following resolution of claimant and title issues between MPAA-represented Program Suppliers and IPG.

4. Based on the assumptions in No. 3 above, I calculated MPAA's share of total program volume (*i.e.*, based on minutes of airtime) and MPAA's share of program viewing on a random selection of distant signal channels each year from 2004 to 2009. Even before confirming the validity of all of IPG's claims, I find:

    - MPAA represented compensable programs accounted for 97.31%-98.44% of total program volume over the years 2004-2009.
    - MPAA represented compensable programs accounted for 99.07%-99.58% of total program viewing over the years 2004-2009.

5. An econometric analysis of the number of subscribers and Program Supplier programming mix demonstrates that there is no statistically significant difference in how MPAA and IPG programs affect subscriber growth. Therefore, viewership share is an economically sound measure of relative market value. Consequently, MPAA's calculated royalty shares are 99.58% in

2004, 99.43% in 2005, 99.19% in 2006, 99.23% in 2007, 99.07% in 2008, and 99.28% in 2009. MPAA's calculated royalty shares will increase should it be determined that some IPG-claimed programming was improperly claimed by IPG.

III. Background And Overview of Royalty Allocation Process

I understand that the purpose of this Phase II proceeding is to allocate the 2004, 2005, 2006, 2007, 2008, and 2009 cable royalty funds ("2004-2009 Cable Royalties") within the syndicated series, movies, specials, and non-team sports category (commonly known as the "Program Suppliers" category) between claimants represented by MPAA and claimants represented by IPG. These cable royalty funds follow from the compulsory license established through Section 111 of the Copyright Act ("Section 111"). The cable compulsory license allows CSOs to retransmit broadcast television signals out-of-market (*i.e.,* on a distant basis) without the need to negotiate private license agreements with the multitude of copyright owners whose programs air on those signals. Section 111 sets the rates for the compulsory license fees paid by the CSOs, and these statutorily-set fees are subject to periodic adjustments.[1] The licensing fees, which are paid by the CSOs to the Copyright Office, are based primarily on the

[1] The periodic adjustments to the royalty fee rates were initially made by the Copyright Royalty Tribunal ("CRT"). Following abolition of the CRT, the adjustments were overseen by Copyright Arbitration Royalty Panels ("CARPs") appointed by the Librarian of Congress. The CARPs were subsequently replaced by the current system of Copyright Royalty Judges.

number and type of distant stations each CSO chooses to carry.[2] After collecting the royalty payments, the Copyright Office distributes them among eligible copyright owners of compensable programs contained in the distant signals (or their representatives),[3] either by agreement among the claimants, or pursuant to the determination in a cable royalty distribution proceeding held before the Judges.

The cable royalty distribution proceedings occur in two phases. In Phase I, the Judges determine how to allocate royalties among eight broad categories of broadcast programming claimants.[4] In Phase II, royalties are divided among individual claimants or their representatives *within* each of the eight broad program categories. I understand that with respect to the 2004-2009 Cable Royalties, MPAA has resolved the controversies with all of the Program Suppliers claimants except IPG.

The Program Suppliers category is comprised of producers and/or distributors of syndicated series, movies, specials, and non-team sports, excluding devotional

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[2] The compulsory license fee was based upon the number of "distant signal equivalents" ("DSEs") that a cable system imported, valuing a distant independent station as one and a network-affiliated station or educational station as 1/4. In general, the number of DSEs carried by a CSO is multiplied by a DSE rate to establish the percentage of their gross revenues charged for importing distant television signals.

[3] Eligible compensable programs are non-network broadcast programs aired on simultaneously retransmitted distant signals during 2004-2009 for which the copyright owner or its representative filed a timely and valid claim. Unless otherwise stated, the television programs discussed in my testimony are compensable programs within the Program Suppliers category.

[4] (1) Program Suppliers; (2) Joint Sports Claimants; (3) Commercial Television Claimants; (4) Public Television Claimants; (5) Devotional Claimants; (6) Canadian Claimants Group; (7) Music Claimants; and (8) National Public Radio.

programs. Syndicated series, movies, and specials are defined for cable compulsory license royalty purposes as including (1) programs licensed to and broadcast by at least one U.S. commercial television station during the calendar year in question, (2) programs produced by or for a broadcast station that are broadcast by two or more U.S. television stations during the calendar year in question, and (3) programs produced by or for a U.S. commercial television station that are comprised predominately of syndicated elements.[5] Examples of Program Suppliers programs at issue in this proceeding include *Judge Judy, Entertainment Tonight, Wheel of Fortune, Legally Blonde, Seinfeld,* and *NASCAR Racing.*[6]

MPAA represents copyright owners of a variety of programs within the Program Suppliers category. In particular, I understand that there are no types of programming in the Program Suppliers category not offered as MPAA-represented programming.[7]

Historically, MPAA has represented the vast majority of claimed compensable programs at issue within the Program Suppliers category in Phase II proceedings. In each of the prior Phase II final awards since 1979, MPAA-represented Program Suppliers

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[5] *See* MPAA-Represented Program Suppliers' Written Direct Statement, Vol. II, Designated Prior Testimony, at Tab B, Written Rebuttal Testimony of Marsha E. Kessler, Addendum B (filed May 15, 2013).

[6] A list of MPAA-represented compensable programming is attached to the Direct Testimony of Jane V. Saunders as Appendix B.

[7] *Ibid.*

have received the overwhelming majority of the royalties awarded to the Program Suppliers category.[8] MPAA-represented Program Suppliers have received, *on average*, over 98% of each Phase II award in the Program Suppliers category.[9] MPAA received these awards in years where multiple Program Suppliers representatives sought royalty awards.[10] In the recently concluded 2000-2003 Phase II Proceeding, IPG was the only other Program Suppliers litigant against MPAA, and MPAA received, on average, 99.49% of each annual Phase II award.

IV. Economic Value of Programming: Relative Market Value Depends on Viewership

At issue in the current Phase II proceeding is how to divide the 2004-2009 Cable Royalties attributable to the Program Suppliers category between MPAA-represented and IPG-represented claimants. The total amount of funds available to the Program Suppliers category was fixed following a combination of litigation and settlement at the

[8] The 1997 Phase II cable royalty CARP decision awarded 99.788% of the Program Suppliers royalties to MPAA-represented Program Suppliers. That decision was vacated by the Librarian of Congress (69 Fed. Reg. 23821, 23822 (Apr. 30, 2004)).

[9] MPAA Phase II awards by cable royalty year were 96.3% in 1979 (49 Fed. Reg. 20048 (May 11, 1984)), 96.9% in 1980 (48 Fed. Reg. 9552 (Mar. 7, 1983)), 96.9% in 1981 (49 Fed. Reg. 7845 (Mar. 2, 1984)), 97.5% in 1982 (49 Fed. Reg. 37653 (Sept. 24, 1984)), 98.2% in 1983 (51 Fed. Reg. 12792 (Apr. 15, 1986)), 98.475% in 1984 (52 Fed. Reg. 8408 (Mar. 17, 1987)), 99.175% in 1985 (53 Fed. Reg. 7132 (Mar. 4, 1988)), 98.5% in 1986 (54 Fed. Reg. 16148 (Apr. 21, 1989)), 99.788% in 1997 (66 Fed. Reg. 66433 (Dec. 26, 2001), *subsequently vacated*, 69 Fed. Reg. 23821 (Apr. 30, 2004)), 98.84% in 2000 (78 Fed. Reg. 64984 (Oct. 30, 2014), 99.69% in 2001 (*Id.*), 99.64% in 2002 (*Id.*), 99.77% in 2003 (*Id.*).

[10] IPG was the sole Program Suppliers claimant against MPAA in the 1997 Cable Phase II Proceeding, in which the CARP awarded 99.788% of the Program Suppliers royalties to MPAA.

Phase I portion of the distribution proceeding.[11] The criterion for dividing the royalty pool among claimants is the "relative market value" of the copyrighted programs.[12]

A. Application of the Relative Market Value Standard

Relative market value corresponds to the price at which the right to retransmit a program carried on a distant broadcast signal would change hands between a willing buyer (a CSO) and a willing seller (a copyright owner), neither being under any compulsion to buy or to sell and both having reasonable knowledge of relevant facts.[13] The "willing buyer" in this hypothetical negotiation is the CSO because it chooses which distant signal channels to carry. CSOs bundle distant signal channels with cable channels, local broadcast channels and pay-per-view channels in different packages. The CSOs then offer the packages to existing and potential subscribers at varying prices. While CSOs base their channel and bundling decisions on attracting and retaining

[11] The Phase I distribution of the 2004 and 2005 cable royalty funds was litigated before the Judges. *See* 75 Fed. Reg. 57063, 57079 (Sept. 17, 2010). Following the proceeding certain of the Phase I Parties appealed the Judges' decision to the D.C. Circuit Court of Appeals. While that appeal was pending the Phase I Parties reached a confidential Phase I settlement regarding the distribution of the 2004-2009 cable royalties. *See* 78 Fed. Reg. 50113 (Aug. 16, 2013).

[12] *See generally* 75 Fed. Reg. 57063 (Sept. 17, 2010).

[13] This definition is consistent with the definition of *fair market value* written by the U.S. Supreme Court: "The fair market value is the price at which the property would change hands between a willing buyer and a willing seller, neither being under any compulsion to buy or to sell and both having reasonable knowledge of relevant facts." *United States v. Cartwright*, 411 U. S. 546, 93 S. Ct. 1713, 1716-17 (1973).

subscribers, other cost considerations factor into their decisions regarding which distant channels to retransmit and how to bundle them.[14]

CSOs' concerns of how to bundle channels are relevant to Phase I Proceedings. However, programming at issue within the Program Suppliers category in this Phase II proceeding is more homogenous than all of the programming at issue in the Phase I proceeding. As a result, the incremental costs to CSOs associated with the carriage of Program Suppliers programs and the differential impact on subscriber growth of these programs can reasonably be assumed to be similar.[15] Analysis in the Phase II proceeding should therefore concentrate more on quantifying subscriber viewing patterns in determining relative market value because in Phase II one would be looking at more homogenous goods within a particular Phase I category.

The relative market value of a program in this Phase II proceeding ultimately depends upon the consumption of the programming as measured by its level of viewing. As explained by actual Program Suppliers copyright owners, audience size – as

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[14] As the Judges noted in the 2004-2005 Cable Phase I Decision, "The rationale for the cable operator's decision concerning which channels to group in any tier offering and at what price, may depend not only on the impact on direct subscriber revenues, but also on such factors as advertising revenues associated with cable network channels, the relative license fee costs of various cable network channels, physical capacity constraints on the number of channels that can be transmitted over a particular cable system and even the direct ownership interests of the cable system in programming content on a given cable network." 75 Fed. Reg. 57063, 57066 (Sept. 17, 2010).

[15] The Judges noted in the 2000-2003 Cable Phase II Decision that "[t]his relative homogeneity suggests that a rational CSO would not be as concerned with whether different programs would attract different audience segments (compared with more heterogeneous programming) and therefore such a CSO would rely to a greater extent on absolute viewership levels." 78 Fed. Reg. at 64996.

measured by viewership – is central when making licensing deals with broadcast stations and cable networks in the world outside the compulsory licensing scheme.[16] Moreover, in an attempt to attract and retain customers, CSOs want to carry programming with high viewership such as syndicated television series that originally attracted a loyal following in their network showing and continue to do so in syndication.[17] CSOs also carry genres of first-run syndicated programs that they believe will garner satisfactory audience levels.[18]

Since this proceeding involves allocating a fixed royalty pool as part of a compulsory licensing scheme, it is entirely appropriate to consider pertinent information concerning the relative economic value of programming, namely program consumption as measured by actual program viewing. Purposefully ignoring actual viewing or ratings could lead to copyright owners of valuable programming receiving disproportionately small royalty awards.

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[16] *See* Docket No. 2001-8 CARP CD 98-99, Written Direct Testimony of Babe Winkelman, p.7 (filed December 2, 2002) and Docket No. 2007-3 CRB CD 2004-2005, Written Direct Testimony of Alex Paen, pp. 11-12 (filed June 1, 2009).

[17] *See* Written Direct Testimony of Alex Paen, p. 12.

[18] *See id.* at pp. 5-6, 9-10.

B. *Measuring Relative Market Value: Volume, Viewership, and Subscribers*

Subscriber preferences are revealed by which distant stations and programs they choose to watch. Subscriber preferences may also be revealed by whether they continue to subscribe to the CSO. Below, I discuss in turn three measures of value: volume, viewership, and subscriber count.

1. Volume

Holding costs constant, CSOs will choose to carry distant signals with programming the CSOs can add to their lineup to attract and retain as many subscribers as possible. In theory, the economic optimizing (*i.e.*, rational) CSO will choose to carry distant signals with the most preferred programming airing at the most preferred times. The total volume of minutes of programming retransmitted by CSOs effectively represents the amount of programming purchased by the CSOs. Therefore, total program volume represents the economic-optimizing CSO choices and provides a measure of the relative economic value of the programming to the CSOs.

While total program volume, or the total number of minutes of programming retransmitted on distant signals, provides useful information concerning the relative value of programming to CSOs, the measure alone is not sufficient. In general, programs' values to the CSO and its subscribers may differ depending on the time slot during which the programs are shown. A 30-minute program shown during primetime might be more valuable to a CSO and its subscribers than an hour-long program shown

in the middle of the night. Moreover, programs of identical duration shown at the same time of day may have very different values to CSOs and their subscribers. That is, programming volume alone does not convey a complete picture of the relative value of the programs.

2. Viewership

Audience size, which is determined through program viewership, is the primary interest of programmers and therefore the most direct measure of a program's relative value.[19] From the CSO's perspective, the more a program attracts subscribers to watch and keep coming back to watch, the more valuable the program is to the CSO's net-revenue maximizing goal of retaining and growing subscriber count. From the subscriber's perspective, relatively low viewership of a given program reflects the value ascribed to that program by cable subscribers and CSOs. Absent the bundling of programs, economic theory implies that a program with no viewership will most likely not continue to be carried.

Program viewership as a measure of relative market value is consistent with economic theory: a CSO's willingness to pay for a particular program is a function of that program's contribution to the CSO's ability to attract and retain subscribers and thereby maximize net revenue.

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[19] Media Programming: Strategies and Practices, 8th ed., S.T. Eastman and D.A. Ferguson, 2009, p. 40.

3. Subscriber Count

While viewership is proportional to value, a question from the net revenue maximizing CSO's perspective is whether similar viewership levels of different programs are associated with different levels of subscriber retention and attraction. All else equal, programs that are responsible for more subscriber growth – both retaining current subscribers as well as encouraging new subscribers – are more valuable to CSOs than programs promoting less subscriber growth. The relationship between program viewing and subscriber count may be of particular interest when analyzing the relative market value as part of the Phase I proceeding. In this Phase II proceeding, however, all the MPAA and IPG represented programs at issue are within the syndicated series and movies category. As described above, we do not expect to see programs in this same category with similar viewership levels being associated with different changes in CSO subscribers. Nonetheless, I statistically examine whether MPAA-represented or IPG-represented programs affect subscriber growth differently.

My estimation approach to determine relative market value of MPAA and IPG compensable programming is consistent with the economic arguments described above. I apply a three-step approach:

1. First, I calculate the relative volume of MPAA programming and IPG programming. This provides a good, but imperfect indicator of the relative value of the two sets of programs.

2. Second, I calculate the relative viewership of MPAA programming and IPG programming. As described above, this is the most direct measure of relative value: if costs are deemed constant, and without taking subscriber growth into account, then, the higher subscriber viewership will suggest higher relative market value of the programming.
3. Third, I examine statistically whether MPAA and IPG programming affect subscriber growth differently. Given that this is a Phase II proceeding and the consequent similarity of the type of programming represented by MPAA and IPG, if there is no meaningful difference in how the two sets of programs affect subscriber growth, then viewership share is the most economically sound measure of relative market value.

C. Data Relied Upon to Measure Relative Market Value of Phase II Programming

I rely upon Nielsen ratings data and viewing data in combination with Tribune Media Services ("Tribune") data to study the volume and viewing information of compensable programs from 2000 through 2009. I also rely upon Cable Data Corporation ("CDC") data that includes information on the number of CSO subscribers of each distantly retransmitted signal analyzed.

These data are described in the subsections below. In addition to the Tribune and Nielsen data, I was also provided lists of MPAA-represented programs for each year from 2000 through 2009.

1. Nielsen Data

Nielsen is a well-regarded and highly-used source of audience measurement information in the television industry. Prior CARP Reports have concluded that Nielsen data provides "relevant" and "reliable" measures of the number of people viewing programs retransmitted on distant signals.[20] I rely on three types of Nielsen data: (1) Nielsen Diary data for 2000-2003, (2) Nielsen Local Ratings data for 2000-2009, and (3) Nielsen National Viewing data for 2000-2009.

a. Nielsen Diary Data

The Nielsen Diary data is obtained from information collected by Nielsen from households throughout the United States during "sweeps" months.[21] Selected households for each sweeps week complete diaries of the stations watched in their home, for up to five television sets, for a one-week period.[22] MPAA provided Nielsen with a list of sample stations, representing at least 75% of all distant cable subscribers each year from 2000 to 2003.[23] For each of these stations Nielsen calculated the amount of distant viewing to each station for each quarter-hour throughout the sweeps

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[20] *See, e.g.*, 55 Fed. Reg. 5647 (Feb. 16, 1990); 1998-99 Cable Phase I CARP Report (Oct. 21, 2003), at 44; 1990-92 Cable Phase I CARP Report (May 31, 1996), at 84.

[21] Nielsen processes diaries from households across the country covering the February, May, July, and November "sweeps months". Occasionally, diary information is collected over additional months.

[22] Information is collected for 24 hours a day over the seven-day period, reflecting programs viewed within each quarter hour segment.

[23] *See* Kessler Testimony at 11-12 for more detail concerning selection of stations.

months.[24] These Nielsen Diary data capture all viewing by distant subscribers (to the sample stations) for 24 hours per day during the sweeps months.

b. Nielsen Local Ratings Data

Nielsen Local Ratings data are collected by electronic meters attached to television sets in a random sample of households in selected geographic markets across the U.S. ("Nielsen metered markets").[25] These data include information on the number and percentage of households in the station's local market tuned to the station for each quarter hour for every day throughout the year.

c. Nielsen National Viewing Data

Similar in collection methodology to the Nielsen Local Ratings data, Nielsen National Viewing data is collected by electronic meters attached to television sets in a random sample of households in Nielsen metered markets. These data include Nielsen's calculations each year from 2000 to 2009 of the number and percentage of households watching television broadcasts over fifteen-minute intervals throughout the day. This information is provided on both a weekday and weekend basis for all broadcast stations as well as on a station affiliation basis.

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[24] *See* 2000-2003 Cable Phase II, Direct Testimony of Paul Lindstrom ("Lindstrom Testimony") at 4-5 for more detail describing methodology. I understand that MPAA has included the Lindstrom Testimony in its Written Direct Statement in this proceeding as prior designated testimony.

[25] A list of U.S. metered markets is contained in Appendix B.

2. Tribune Data

The Tribune data consists of a library of information of each program airing throughout each day, including when the program aired; the station on which the program aired; whether it was local, network, or syndicated; the program title; the episode title (if applicable); the type of program (movie, game show, etc.); and so on. I excluded as non-compensable all network programming, that is, all programs broadcasted on ABC, CBS, or NBC. I also excluded as non-compensable programs airing on WGN's local feed ("WGN") that were not simultaneously broadcast on WGN's national feed ("WGNA").

3. CDC Data

The CDC data originate from statements of accounts ("SOAs") that CSOs are required to file with the Licensing Division of the Copyright Office semi-annually. These data include information regarding the distant signals carried, the number of subscribers to each signal, and the fees generated by each signal during years covered by this proceeding.[26]

Based on the CDC data, there were over 1,000 stations that were distantly retransmitted by CSOs each year from 2004 to 2009.[27] Due to cost considerations in obtaining Nielsen Local Ratings data and Tribune data described above for all these

[26] *See* 2004-2009 Cable Phase II, Direct Testimony of Jonda Martin.

[27] Consistent with Nielsen's ratings and viewing measurement approaches, split signals such as WPIX and WPIX-DT are aggregated and considered a single station.

stations, I implemented a stratified random sampling methodology to identify a sample of distantly retransmitted stations each year from 2000 to 2009.[28] Across the samples there were 1,269 station-year combinations with 533 unique stations. Each year's random sample included both large and small stations in terms of the number of distant subscribers as well as fees generated. These random samples were given to Nielsen and to Tribune. For all of these stations and years for which data was available, Nielsen provided Local Ratings data and Tribune provided the Tribune data described above.

4. CRTC Program Logs

Stations broadcasting in Canada are required to submit monthly program logs to the Canadian Radio-television and Telecommunications Commission ("CRTC").[29] These CRTC program logs include information such as station call signs, the program title and actual start time and end time of each program transmitted by each Canadian station, and an indicator for the country of origin of each program. I understand that programming aired on Canadian stations which originated from countries other than the United States are not compensable as Program Suppliers programs and therefore are irrelevant to this proceeding.[30] I used these CRTC program logs to determine the

[28] A list of sampled stations for the local ratings data is contained in Appendix C. I implemented a random sampling methodology, stratified by number of distant subscribers of the stations.

[29] See the CRTC website for more information http://www.crtc.gc.ca/.

[30] I understand such programs are compensable only in the Canadian Claimants Group category, which is not at issue in this proceeding. *See* Written Rebuttal Testimony of Marsha E. Kessler (filed May 15, 2013).

country of origin of programs claimed by both IPG and MPAA which aired on the Canadian stations.[31]

D. Economic Analysis: Estimating and Imputing Distant Viewing

To determine the relative market value of compensable Program Suppliers programs that aired on distantly retransmitted stations, one would calculate the relative viewing of those programs on a distant basis. I am able to provide a reasonable estimate of relative distant viewing levels relying upon the data sources described in the previous section. In particular, I calculate the mathematical relationship between distant viewing levels for the years the data is available and various program characteristics during those years. I then extrapolate that mathematical relationship to estimate distant viewing for compensable programs each year from 2004 to 2009.

E. Relative Market Value of MPAA versus IPG Programming

A review of the various datasets described above demonstrates the breadth of MPAA programming and the extent to which it is retransmitted in distant markets.

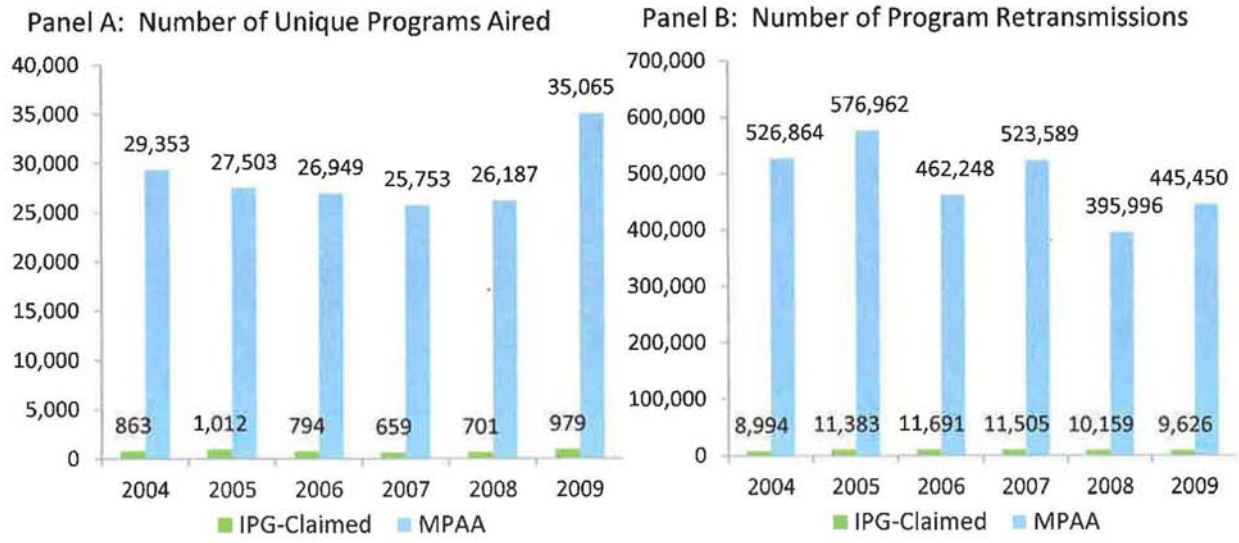
1. Program Retransmissions and Volume Statistics

The charts below present summary statistics concerning the number of MPAA and IPG-claimed compensable programs and associated programming volume that aired on the

[31] I rely on CRTC program logs for years 2000-2003. However, many program titles broadcast during those years continued to be broadcast in subsequent years so that information on country of origin of programming is available from CRTC through 2009. Where no country of origin information is available, I assume the same country of origin trend holds for both MPAA and IPG titles, based on their 2000-2003 claims.

130 to 131 randomly sampled distantly retransmitted stations for each year between 2004 and 2009.

Chart 1: Unique Compensable Programming and Retransmissions Statistics for Sample Stations



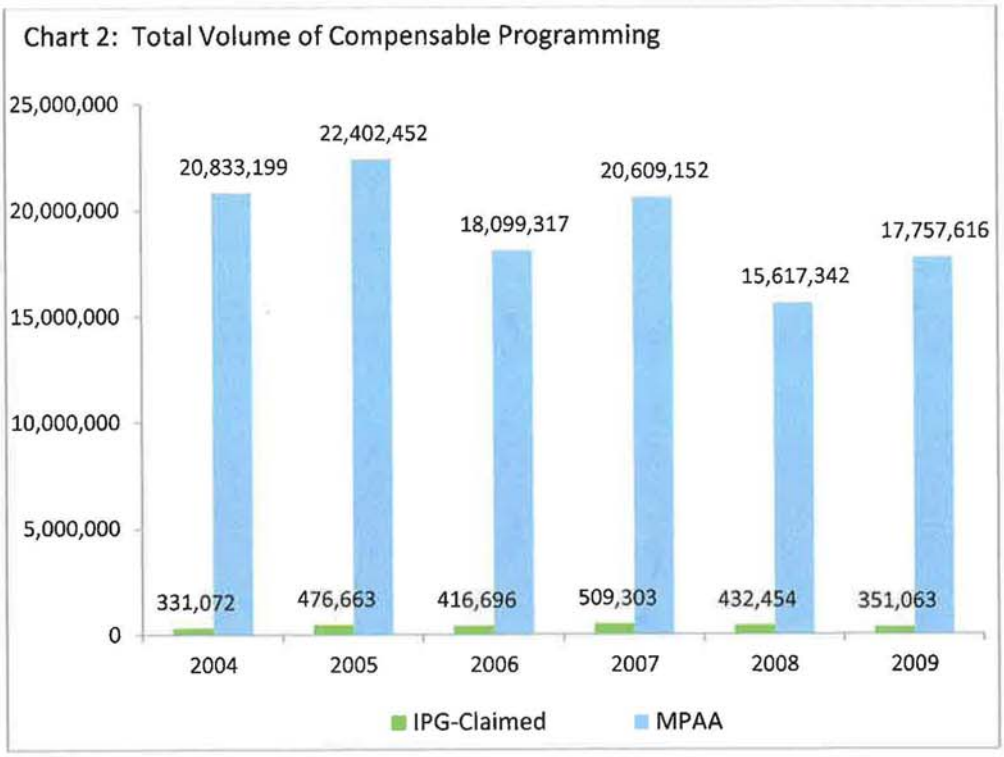
Panel A in Chart 1 shows that each year from 2004 to 2009, between 25,753 and 35,065 unique MPAA compensable programs aired on these randomly sampled stations.[32] In contrast, only between 659 and 1,012 unique IPG-claimed compensable programs aired on these stations over the same time period. Therefore, on average, each year from 2004 to 2009, MPAA-represented over 34 times as many unique programs as did IPG.

[32] I define a "unique program" at the episode level. Thus, e.g., different episodes of the series *The Simpsons* are each defined as a unique program.

In addition to representing the copyright owners of far more programs than IPG, the MPAA-represented programs were retransmitted more often than IPG-represented programs. Panel B of Chart 1 shows that the total number of annual MPAA-represented program retransmissions varied from 395,996 in 2008 to 576,962 in 2005 compared to IPG-claimed retransmissions for the same period which varied from 8,994 in 2004 to 11,691 in 2006. Meaning, on average, each of MPAA's programs was retransmitted approximately 17 times while each IPG-claimed program, on average, was retransmitted approximately 13 times.[33]

Chart 2 below demonstrates how MPAA's volume of programming far exceeds IPG's during the 2004 to 2009 cable royalty years.

[33] These estimates are calculated by dividing the average number of retransmissions by the average number of unique compensable programs aired.



Programs varied in duration, from shows less than thirty-minutes to movies and specials several hours long. Chart 2 shows that MPAA compensable programs ranged between 15.6 and 22.4 million minutes of distantly retransmitted air time on the randomly sampled stations from 2004 to 2009. IPG-claimed retransmitted programs covered far less air time, between 331,072 and 509,303 minutes over the same time period. Thus, the total volume of MPAA-represented programming was approximately 45 times greater than the total volume of IPG-represented programming. Based on the number of programs retransmitted, the average duration per retransmitted show was approximately 40 minutes for both MPAA and IPG-claimed programming.

My analysis of program volume on randomly sampled stations demonstrates that MPAA compensable programming constitutes the vast majority of retransmitted programming in the Program Supplier category. Even before confirming the validity of IPG's claims, MPAA represented compensable programs accounted for 98.44%, 97.92%, 97.75%, 97.59%, 97.31%, and 98.06% of total volume of Program Supplier programming over the years 2004, 2005, 2006, 2007, 2008, and 2009, respectively. However, as described earlier, the relative minutes, or volume, of programming retransmitted provides an imperfect metric of the relative value of the two sets of programs. The volume measure does not take into account what time of day the retransmission took place, the number of cable subscribers who had access to the distantly retransmitted broadcast, or the number of households who had access that watched the show. The share of viewing minutes provides a superior measure of relative value.

2. Program Viewing Statistics

While relative distant viewing provides a reasonable measure of a program's relative economic value in the context of this Phase II Proceeding, as described earlier, I understand that direct measures of distant viewing data are not available for the years at issue in this proceeding. However, distant viewing information is available covering the years 2000 to 2003 in the Nielsen Diary data. The Nielsen Diary data measures all viewing by distant subscribers to the sample stations for 24 hours per day during the

sweeps months for the years 2000 to 2003. In order to determine distant viewing minutes throughout each year from 2004 to 2009, I employed multiple regression analysis techniques, relying upon the lists of MPAA and IPG-claimed compensable programs. As described earlier in my testimony, I assume that each program title claimed by both MPAA-represented Program Suppliers and IPG is a valid MPAA-represented Program Suppliers program. I further assume that any program title claimed by IPG and not claimed by MPAA constitutes a valid IPG-represented program.[34]

The regressions rely upon information during sweeps months in 2000-2003 to calculate the mathematical relationship between distant viewing and (1) local or national ratings for the program, (2) the total number of distant subscribers of that station, (3) the year the program aired, (4) the time of day the program aired by quarter hour, (5) the type of program aired, and (6) the station affiliation the program aired on. The regressions demonstrate that there is a positive and statistically significant relationship between local ratings and distant viewing.[35] The higher the ratings of a particular program on a national or local basis, all else equal, the higher is the level of distant viewing. The regressions also show that the total number of a station's distant

[34] I understand that MPAA-represented Program Suppliers intends to challenge the validity of some of the IPG-represented titles. I will update my calculations following resolution of the claimant and title issues.

[35] Appendix D provides regression results. The economic model better predicts distant viewing with separate regressions for WGN and non-WGN stations. The results show that for retransmissions of programs on stations other than WGN, holding other factors constant a one percent increase in a program's local ratings is associated with a 0.547% increase in its distant viewership; for WGN holding other factors constant a one percent increase in local ratings is associated with a 0.372% increase in distant viewership.

subscribers, the year the program aired, the time of day the program aired, the type of program aired, and the station affiliation the program aired on, each significantly affect distant viewing.

Based on the mathematical relationship between distant viewing during sweeps months and national, or local, ratings as well as the other factors described above, I calculated distant viewership for programs retransmitted by stations in the sample for each quarter hour, for each entire calendar year, from 2004 to 2009. Because local ratings data are only available for stations broadcasting in Nielsen metered markets, I performed three sets of multiple regression analyses:

Model One: I estimated the relationship between distant viewing and the average U.S. national television ratings during the quarter hour the program aired, the type of program, and the year of the broadcast (to adjust for annual trends in viewing). While this model takes into account important time of day factors influencing viewing patterns, it does not take into account the relative popularity of specific programs airing at similar times of the day. Therefore, I estimated two additional econometric models.

Model Two *(only for stations in Nielsen metered markets)*: I calculated the relationship between distant viewing and the program's local ratings and the five additional factors described above.

Model Three: I estimated the same econometric model as Model Two, but for programs broadcasting outside Nielsen metered markets I replaced their unmeasured

local ratings with the average local ratings of retransmitted programs of the same type broadcasting during the same time of day.[36]

Because the regression estimation of Model Two is limited to stations broadcasting in metered markets, the model generates distant viewing estimates only for programs retransmitted from stations in metered markets. These distant viewing estimates are made for each quarter hour of every day, each year from 2004 to 2009. In contrast, both Model One and Model Three generate distant viewing estimates for all programs retransmitted by the randomly sampled stations from all markets, for each quarter hour of every day, each year from 2004 to 2009.

Under each of these models, MPAA's share of distant viewing is the sum of estimated household viewing of MPAA-represented programs divided by the total level of estimated household viewing of either IPG-claimed or MPAA-represented programs. Table 1 below reports MPAA's and IPG's relative distant viewing share on the randomly selected stations by cable royalty year for each of the three econometric approaches described above.

[36] The Tribune data assigns each program to a unique program type category such as "Game Show", "Movie", "Network Series", or "Talk Show". I define six time of day categories by the time intervals 5 AM – 9 AM, 9 AM – 4 PM, 4 PM – 8 PM, 8 PM – 11 PM, 11 PM – 2 AM, and 2 AM – 5 AM. Programs with missing local ratings receive the average local ratings of programs of the same program type broadcast at the same time of day. For example, a Network Series program broadcasting at 9 PM with no local ratings information is given the average local rating of all Network Series programs broadcasting between 8 PM and 11 PM.

Table 1: Distant Viewing Shares of Program Suppliers Programming Relying on 2000-2003 Nielsen Diary Data*

Year	*Program Supplier*	*Model 1: Calculations Based on U.S. Average Quarter Hour Ratings, all Sampled Stations Share of Viewing*	*Model 2: Calculations Based on Program's Local Ratings, Stations in Metered Markets Share of Viewing*	*Model 3: Calculations Based on Program's Local Ratings, all Sampled Stations Share of Viewing*
2004	MPAA	99.32	99.70	99.58
	IPG	0.68	0.30	0.42
2005	MPAA	99.21	99.73	99.43
	IPG	0.79	0.27	0.57
2006	MPAA	98.94	99.51	99.19
	IPG	1.06	0.49	0.81
2007	MPAA	99.05	99.46	99.23
	IPG	0.95	0.54	0.77
2008	MPAA	99.06	99.66	99.07
	IPG	0.94	0.34	0.93
2009	MPAA	99.27	99.47	99.28
	IPG	0.73	0.53	0.72

*As described in the text, MPAA may challenge the validity of many of IPG's claimed representations. MPAA's calculated shares would increase should some of IPG's claimed representations prove invalid.

In examining Table 1, one can observe the following: (1) in estimating Model One, which does not take into account each program's relative popularity as measured by its local ratings, MPAA's annual share of program viewing ranged from a low of 98.94% in 2006 to a high of 99.32% in 2004; (2) in estimating Model Two, which takes into account local ratings in estimating distant viewing levels, but only calculates distant viewing of retransmitted programs of stations broadcasting in Nielsen metered markets, MPAA's annual share of program viewing ranged from a low of 99.46% in 2007 to a high of 99.73% in 2005; and (3) in estimating Model 3, which takes into account program local ratings, and estimates distant viewing for all stations in the sample, MPAA's annual

share of program viewing ranged from a low of 99.07% in 2008 to a high of 99.58% in 2004. In each of these models, MPAA's shares of viewing are higher than its shares of total programming volume, leading to my conclusion that MPAA-presented programs are more-highly watched and more valuable relative to IPG-represented programs.

As described earlier in my testimony, viewership share may not equate exactly to relative market value if viewing of the same amount of MPAA and IPG compensable programming is associated with different levels of subscriber attraction and retention. Unusual "niche" programming could be more valuable to CSOs if the same level of viewing was associated with greater subscriber growth. To examine whether this is the case, I perform a statistical analysis of the relationship between the number cable subscribers of distantly retransmitted stations and changes in the programming mix on those stations. While consumer choices regarding whether to subscribe to a CSO, a competitor, or at all may depend on a host of factors, the statistical analysis demonstrates that, holding distant viewers constant, an increase in the relative volume of IPG-claimed programming compared to MPAA programming is not associated with a statistically significant change in the number of subscribers in the following year.[37] I therefore make no adjustments to MPAA's relative program value as measured by its share of viewing.

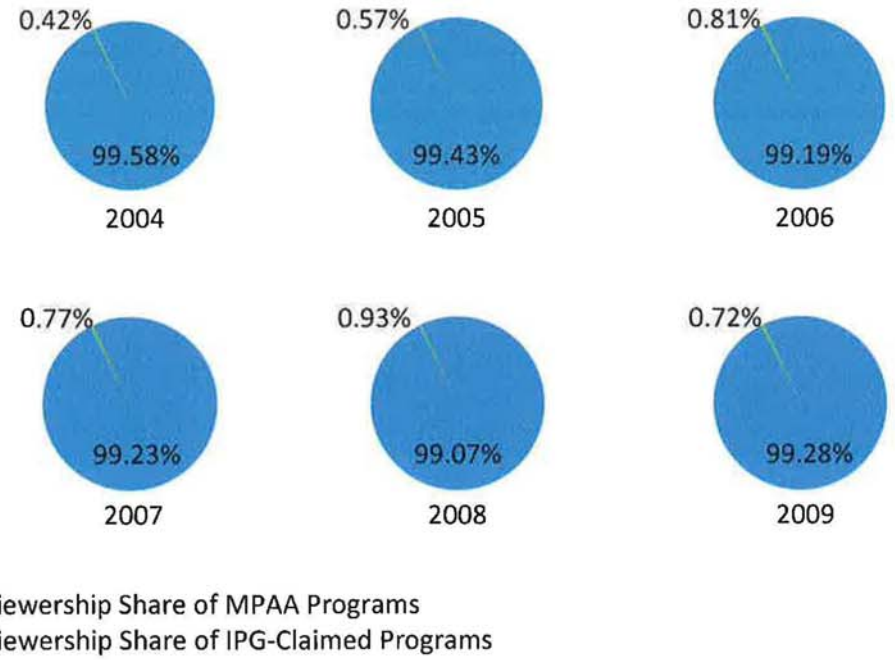
[37] See Appendix Table D-3 for regression results.

V. Conclusion: Royalty Share Allocation

To determine MPAA and IPG cable royalty shares, I analyzed data concerning program volume, program viewing, and the number of subscribers of a randomly selected set of stations each year from 2004 to 2009. Based upon information currently available, my analysis indicates that the value MPAA compensable programming accounted for 99.58%, 99.43%, 99.19%, 99.23%, 99.07%, and 99.28% of the total Program Supplier programming over the years 2004, 2005, 2006, 2007, 2008, and 2009, respectively. These estimated annual viewing shares are based on Model Three described in the preceding section. While each model provides reasonable estimates of relative program viewing, I rely on Model Three because it takes into account individual program popularity as measured by local ratings and generates estimates of distant viewing for *all* MPAA and IPG-claimed represented programs retransmitted by the randomly sampled stations from all markets, for every day of each cable royalty year. Moreover, my analysis indicates that IPG-claimed program viewing does not lead to greater subscriber growth. Thus, relative program viewership provides a reasonable and reliable measure of relative economic value of distantly retransmitted programing.

As summarized in Chart 3 below, MPAA's reasonable cable royalty share is 99.58% in 2004, 99.43% in 2005, 99.19% in 2006, 99.23% in 2007, 99.07% in 2008, and 99.28% in 2009.

Chart 3: Cable Royalty Shares of Program Supplier Programming*



IPG's implied cable royalty shares are 0.42% in 2004, 0.57% in 2005, 0.81% in 2006, 0.77% in 2007, 0.93% in 2008, and 0.72% in 2009. I understand that MPAA disputes the validity of some programs currently claimed by IPG. If some of those IPG claims are ultimately deemed invalid, my calculated MPAA royalty share would increase and IPG's royalty share would correspondingly decrease.

APPENDIX A: CURRICULUM VITAE

Jeffrey S. Gray, Ph.D.
President
Analytics Research Group LLC
912 F Street NW
Washington, DC 20004

Education & Background Summary

Ph.D., Economics, University of Pennsylvania
B.A., Economics (with honors) University of California Santa Cruz

Dr. Gray has over 20 years of experience in economic and statistical consulting, survey design, sampling methodologies, and complex database analytics. He is an authority on economic markets, statistical methods, and economic damages. His research has been published in some of the top peer-reviewed journals in the economics profession including *The American Economic Review* and the *Journal of Human Resources*. Dr. Gray has presented his findings before a variety of seminars at universities, meetings of professional societies and conferences on specialized topics in the United States and abroad. Dr. Gray has received recognition and financial support to pursue his research from the U.S. Department of Labor, the U.S. Department of Agriculture, and the Research Board of the University of Illinois. Throughout his career Dr. Gray has served as referee for professional journals assessing the appropriate application of economics and statistics.

Dr. Gray has conducted studies for corporations, government agencies and law firms on a variety of economic and statistical issues. Dr. Gray has served as a testifying expert on behalf of both plaintiffs and defendants addressing class certification, liability and/or damages issues. He has provided written or oral expert testimony in state, federal, and international courts and presented analytical findings before the Securities and Exchange Commission, the Texas Commissioner of Insurance, the Government of Singapore, and the New York and Massachusetts State Offices of Attorney General.

In addition to leading the economic and statistical consulting practices at Huron Consulting Group and Deloitte Financial Advisory Services LLP, Dr. Gray has served on the staff of the President's Council of Economic Advisers and on the faculty of the University of Illinois where he taught graduate and undergraduate courses covering consumer demand analysis, labor economics, and statistics. He earned a Ph.D. in economics from the University of Pennsylvania.

Professional Experience

- Analytics Research Group LLC, Washington, DC
  - President, Washington DC, 2013 – Present
- Deloitte Financial Advisory Services LLP, Washington, DC
  - Principal and Leader of Economics Practice, Washington DC, 2010 - 2013
- Huron Consulting Group, Boston, MA
  - Managing Director & National Leader, Economics, 2006 – 2009
- Deloitte Financial Advisory Services LLP/Deloitte & Touche LLP: FAS, Boston, MA
  - Principal-In-Charge, Boston, MA, 2004 – 2006
  - Economist & Principal, Economic Consulting, 2002 – 2006
- Arthur Andersen LLP, Boston, MA & Chicago, IL
  - Director, Economic Consulting, 2001 – 2002
  - Economist, 1999 – 2002
- Welch Consulting, College Station, TX
  - Senior Economist, 1996 – 1999
- University of Illinois, Urbana, IL
  - Assistant Professor, 1993 – 1997
- President's Council of Economic Advisors, Washington, DC
  - Staff Economist, 1991 – 1992
- University of Pennsylvania, Philadelphia, PA
  - Research, Teaching Assistant and Instructor, 1989 – 1991

Professional Affiliations

- American Economic Association
- American Finance Association
- American Statistical Association

Referee Responsibilities

- American Economic Review, Demography, Economic Inquiry, International Economic Review, Eastern Economic Journal, Journal of Human Resources, Journal of Labor Economics, Review of Economics and Statistics, Social Science Quarterly, Sociological Forum.

Publications and Presentations (Prior 10 Years)

- Jeffrey S. Gray. *Class Action Litigation: Working with Economics and Statistics Experts*, invited presentation, Washington, DC, September 2013.

- Jeffrey S. Gray. *Patent Infringement Damages: Approaches and Trends*, Moderated Panel on Intellectual Property in the Life Sciences, May 2010.

- Jeffrey S. Gray. *Institutional Investors: Protecting Your Assets – Prudent Investing,* Moderated Panel on Fiduciary Litigation Issues, February 2009.

- Jeffrey S. Gray. *Subprime Fallout: Prudent Investing & Economic Damages.* Professional Liability Underwriting Society Conference, Boston, MA. October 2008.

- Jeffrey S. Gray with Carl Tannenbaum and Laurence Kotlikoff, *Was the Credit Crisis Foreseeable?* Moderated Panel, April 2008.

- Eugene Canjels, Jeffrey S. Gray and Michel J. Vanderhart. *Does Everyone Overstate the Number of Hours They Work? An Examination of Survey Response Bias Among Salaried and Hourly Workers*, White Paper, April 2005.

Expert Testimony & Affidavits (Prior 4 Years)

- *In the Matter of Distribution of the 2000, 2001, 2002, and 2003 Cable Royalty Funds,* before the Copyright Royalty Judges, Washington D.C., Doc No. 2008-2 CRB CD 2000-2003 (Phase II), expert affidavits and trial testimony (2013).

- *Michael Brown, Brian Singer et al v. Canadian Imperial Bank of Commerce,* proceeding under the Class Proceedings Act, 1992, Court File No. 08-CV-00365119CP, Ontario Superior Court of Justice, Canada; expert affidavit and oral cross-examination (2011).

- *Wayne B. Gould et al v. Western Coal Corporation, et al.,* proceeding under the Class Proceedings Act, 1992, Court File No. CV-09-391701-00CP, Ontario Superior Court of Justice, Canada; two expert affidavits (2011).

- *Michael R. Cook v. Windham Equity Company,* C.A. No. 07 CA 12152 WGY, U.S. District Court of Massachusetts; expert and supplemental reports and trial testimony (2009).

APPENDIX B: NIELSEN METERED MARKETS

Metered Market	Years in Metered Market Data
New York	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Los Angeles	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Chicago	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Philadelphia	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Dallas-Ft. Worth	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
San Francisco-Oak-San Jose	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Boston (Manchester)	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Atlanta	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Washington, DC (Hagrstwn)	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Houston	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Detroit	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Phoenix (Prescott)	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Seattle-Tacoma	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Tampa-St. Pete (Sarasota)	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Minneapolis-St. Paul	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Denver	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Miami-Ft. Lauderdale	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Cleveland-Akron (Canton)	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Orlando-Daytona Bch-Melbrn	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Sacramnto-Stkton-Modesto	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
St. Louis	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Portland, OR	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Pittsburgh	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Charlotte	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Indianapolis	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Raleigh-Durham (Fayetvlle)	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Baltimore	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
San Diego	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Nashville	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Hartford & New Haven	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Salt Lake City	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Kansas City	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Cincinnati	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Columbus, OH	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Milwaukee	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
San Antonio	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
West Palm Beach-Ft. Pierce	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Birmingham (Ann and Tusc)	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Las Vegas	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Norfolk-Portsmth-Newpt Nws	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Albuquerque-Santa Fe	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Oklahoma City	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009

Greensboro-H.Point-W.Salem	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Jacksonville	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Louisville	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Memphis	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Buffalo	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Providence-New Bedford	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
New Orleans	2000, 2001, 2002, 2003, 2004, 2005, 2007, 2008, 2009
Austin	2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Richmond-Petersburg	2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Ft. Myers-Naples	2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Dayton	2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Greenvll-Spart-Ashevll-And	2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Knoxville	2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Tulsa	2003, 2004, 2005, 2006, 2007, 2008, 2009

APPENDIX C: STATIONS SAMPLED FOR ANALYSIS

2000		2001		2002		2003	
Station	Distant Subscribers	Station	Distant Subscribers	Station	Distant Subscribers	Station	Distant Subscribers
WGN	34,764,247	WGN	32,026,304	WGN	34,016,201	WGN	35,464,425
WPIX	2,533,703	WPIX	2,500,563	WPIX	2,098,975	WPIX	2,154,652
WSBK	750,861	WUAB	758,308	WUAB	749,972	WUAB	784,586
KTLA	689,106	KTLA	657,028	KTLA	625,663	KTLA	624,007
WUAB	686,344	WSBK	612,404	WSBK	612,541	WSBK	586,989
WWOR	559,362	WPHL	570,492	WPHL	512,848	WNBC	582,450
WKBD	452,604	WNBC	552,515	KPTV	504,363	WPHL	503,032
WPHL	450,064	WWOR	478,579	KATU	468,610	WWOR	436,202
WNBC	349,939	WPSG	467,238	KGW	452,492	KTNC	411,988
WVTV	245,157	KTNC	429,758	WNBC	449,897	WKRN	364,006
WXIX	226,434	WKBD	350,591	WWOR	441,863	WPSG	359,173
KGO	221,344	WKRN	296,304	WKBD	399,417	WKBD	358,241
WISN	220,088	WLTV	257,914	KTNC	383,312	WTXF	276,475
KCAL	218,850	WBNS	256,989	WBNS	347,325	WXIX	250,274
WBAL	213,882	KGO	248,703	WPSG	314,878	KGO	240,200
WTXF	211,275	KCAL	242,168	WTXF	272,141	KCAL	238,015
WPSG	208,306	WTXF	241,563	WFAA	264,447	WFAA	200,204
WTMJ	207,459	WJZ	225,087	WSYX	259,795	WJZ	198,236
KMSP	205,550	WNYW	222,444	WXIX	240,684	WBNS	197,936
WFAA	198,577	WXIX	218,803	KCAL	221,142	WVTV	197,129
KWGN	197,143	WFAA	199,945	KGO	218,042	WNYW	192,837
WXIA	191,030	WBAL	195,589	WKRN	213,231	WSB	188,740
WSB	190,672	WSB	189,041	WEWS	207,543	WPVI	181,634
WJZ	180,682	KMSP	181,734	WVTV	206,307	KWGN	176,367
WNYW	173,735	KWGN	169,397	WSB	197,550	KCOP	164,099
WKRN	166,231	KCRA	163,480	WPVI	195,895	WDIV	163,636
WBNS	162,185	WXIA	162,596	WNYW	191,661	WXIA	162,029
KTNC	162,006	WCAU	156,620	KMSP	188,185	WCAU	156,605
KCNC	161,005	WDIV	155,727	KWGN	185,704	KTVU	154,702
KRON	149,310	WPVI	147,761	WXIA	180,749	WISN	154,038
WCFT	147,516	WISN	142,572	WJW	170,369	KCRA	149,337
WCAU	141,773	KCOP	142,258	WCAU	170,063	WTMJ	147,024
KCOP	137,843	KNBC	141,094	WPXS	166,827	KMSP	136,194
KICU	137,800	WVTV	138,847	WSFJ	166,723	WBZL	135,961
KMGH	128,369	KYW	137,885	WUNI	165,914	KICU	135,938
WPVI	123,639	KDKA	137,565	KCRA	165,105	KYW	134,624
KCRA	122,560	WBZL	136,508	WWHO	163,878	WBAL	130,800
KUSA	122,133	KABC	135,587	WTMJ	146,743	WLTV	129,542
KSHB	119,437	WSYX	134,740	WISN	146,743	KNBC	128,282
WUNI	118,845	KICU	133,536	WJZ	146,008	WUSA	128,189

KNBC	116,086	WTMJ	131,048	KYW	145,369	WSYX	122,467
WDCA	115,683	KRON	130,215	WDIV	144,219	KCNC	118,062
WAGA	114,327	WDCA	130,060	WBAL	133,044	WRIC	116,010
WBZ	112,220	WUSA	122,325	KNBC	131,177	WDCA	112,831
WIAT	110,372	KCNC	119,009	KABC	126,326	WBZ	104,965
KDKA	108,842	WRIC	116,702	KCNC	124,263	KDKA	102,629
KXTX	105,349	KXTX	108,510	KCOP	123,555	KABC	101,391
KYW	102,752	WTAE	105,937	WIAT	119,473	WTAE	101,021
KPLR	102,555	KTVU	105,831	WDCA	114,543	WWBT	98,994
KMBC	100,962	WWBT	100,388	WLVI	113,289	WGCL	93,712
KABC	99,800	WBZ	98,162	KDKA	112,871	KBWB	93,414
KSDK	97,472	KMGH	97,413	KMGH	108,284	WIAT	93,269
WSYX	96,244	WIAT	93,774	KMBC	101,489	WHDH	92,685
WGCL	94,877	KUSA	91,596	KTVU	98,504	WCVB	91,640
WDIV	91,758	KPLR	91,516	KSHB	98,312	WPXI	91,471
WPXI	90,263	KSHB	87,485	WGCL	94,267	KMGH	89,251
WLVI	90,105	WGCL	85,359	KICU	93,945	KRON	88,693
WBPX	89,613	KSDK	85,041	WTAE	92,015	KMBC	88,600
WUSA	87,231	KBWB	85,013	KPLR	91,789	KSHB	85,050
KPIX	87,172	KPTV	84,374	KUSA	90,416	WTTG	83,913
WTAE	85,244	WTTG	84,136	WBZ	87,207	WTVD	82,405
KTVU	83,405	WMAR	79,669	WUSA	82,558	KPLR	82,199
KPTV	83,225	KMBC	78,638	WCVB	82,246	WLKY	80,924
KBWB	79,924	WRC	78,372	WFLD	81,933	KUSA	80,921
WFLD	78,535	WCMH	77,987	KSDK	81,485	KSDK	78,239
KTXL	72,748	WFLD	77,731	WRIC	78,977	WFTC	77,544
WBNX	61,259	WCVB	75,885	WTVD	77,281	WCMH	77,336
WCCO	59,697	WTVD	75,523	KSL	76,995	WHBQ	66,356
KBHK	59,310	WPXI	73,923	WMAQ	67,620	WCWB	66,115
KWTV	58,551	KTRK	57,476	KTXL	66,371	WTBS	63,141
WMAR	57,345	WTVR	57,204	WBBM	60,169	WCCO	60,591
WLKY	55,231	KSL	56,509	WTVE	57,417	WBBM	59,880
KXAS	54,991	KPIX	54,190	WPGH	53,022	WAGA	54,706
KHWB	54,581	WBNX	53,963	KXAS	51,177	WNEG	52,053
KCBS	49,215	WLVI	50,542	KDFW	49,742	WMUR	50,435
WNPA	48,683	WDRB	49,377	WDAF	47,797	WREG	45,607
KTTV	48,492	WFMZ	46,008	WFTC	47,612	WBNX	44,008
WPGH	47,223	WHBQ	40,431	WMC	44,025	WZTV	43,875
WNDS	46,731	WCFT	40,395	WLTV	43,678	WDAF	43,273
WBBM	46,374	WVTM	40,287	WRTV	42,813	KOMO	42,092
WDAF	42,864	KOMO	38,429	KUVS	42,448	KATU	41,066
WRAL	42,734	KCTV	37,996	WTTV	42,010	KBHK	38,543
WWL	40,389	WRAL	36,401	WRC	37,766	WLVI	37,691
KOMO	37,571	WDWB	35,801	KOIN	35,364	WRAL	35,540
KTRK	35,005	WTTE	31,313	WPLG	33,829	WABM	33,687
WCWB	28,465	KING	31,270	WFXT	31,637	WPLG	31,688

WVPX	21,382		KTVK	29,959		WXTV	29,750		KPDX	31,238
WWPX	21,093		KMOV	29,404		WPXN	29,670		WXPX	29,752
KDNL	20,326		KENS	29,243		KOAT	28,054		KOAT	28,913
WMUR	18,564		WNPA	28,376		WVLT	27,233		KNXV	27,787
WABC	18,103		KOCO	24,055		KOKH	22,212		WBKI	24,385
WITI	18,043		WXYZ	22,172		WHAG	18,827		WPXD	23,583
WHMB	17,297		WWPX	21,744		WLWT	18,281		WUNI	23,033
WFTV	16,753		WCNC	16,762		WXII	17,899		WWPX	22,720
WGBO	16,595		WTBS	16,625		KDFI	15,974		KSTP	20,916
WTOG	16,445		WUTF	13,444		WPCB	14,751		KDFI	15,189
WTTE	16,308		KTXA	13,021		KSMO	14,174		WNUV	12,617
WUPL	16,123		KAUT	12,960		WGBO	13,593		KHWB	12,455
WPXL	16,085		KCCO	10,881		KEYE	13,476		WFMY	11,568
WSAH	15,557		WJBK	9,666		KTVI	12,727		WCNC	11,284
KNXV	15,051		KMWB	9,347		KTVK	11,822		WDTN	9,113
WKYC	14,649		WPLG	7,878		WFMY	11,637		KCWE	8,877
WCGV	11,364		KDFI	7,540		WTTK	11,625		WSKY	8,781
KGTV	11,076		WSFJ	7,377		KNXV	11,412		KSTC	7,775
KFMB	11,076		KTTV	7,095		WSPA	9,504		WRBU	7,695
WJW	10,969		WPWR	6,826		KNVA	8,477		WIVB	7,201
WCBS	9,907		KRIV	6,669		KVDA	8,469		WHNO	6,587
KPDX	7,658		WGBO	6,599		WPWR	7,523		WMBC	6,527
WSCV	6,331		WUPN	6,511		WDBB	5,327		WTTO	6,309
WTHR	5,423		KUTP	5,861		WBBH	5,289		WUTV	6,151
WTJP	5,299		KPPX	5,827		WNPX	4,990		WPWR	5,980
WJBK	5,201		WDBB	5,337		WPPX	4,857		WPXP	5,877
WUXP	3,170		WUPA	3,521		WAVY	2,212		WUPN	5,174
WUPN	2,980		WNPX	2,774		KVEA	1,548		WKOI	4,789
WXLV	2,941		WLNE	2,722		WAWS	758		WOFL	3,099
KUVS	2,371		WKMG	2,613		WJYS	529		WVBT	2,997
WNCN	805		WTBY	1,534		WPXJ	383		WWJ	2,013
WFTS	658		KVBC	1,278		WFOR	333		WOPX	1,279
WAXN	648		WFLA	1,152					KZJL	1,202
KSTU	352		WCPO	922					WAWS	671
KNLC	140		KWEX	920					WFDC	232
WPXV	85		WGNO	439					WATE	187

2004		2005		2006		2007	
Station	Distant Subscribers	Station	Distant Subscribers	Station	Distant Subscribers	Station	Distant Subscribers
WGN	38,274,172	WGN	39,286,518	WGN	39,795,298	WGN	41,514,827
WPIX	1,816,450	WPIX	1,546,337	WPIX	1,209,157	CBUT	1,044,369
CBUT	1,000,121	CBUT	1,019,966	CBUT	1,027,499	WPIX	960,689
WUAB	667,606	WUAB	847,741	WNBC	908,508	WUAB	657,565
KTLA	573,888	KTLA	594,440	WUAB	862,015	CKSH	564,066
WNBC	554,502	CKSH	571,062	CKSH	576,120	WPHL	450,257
WPHL	512,760	WNBC	502,782	KTLA	558,866	KTLA	438,168
WWOR	430,505	WPHL	461,929	WPHL	463,595	WNBC	436,530
CBET	428,200	WWOR	443,277	WSYX	448,250	KTNC	387,303
WSBK	407,943	CBET	433,579	KTNC	403,345	CBET	372,036
WKBD	398,357	KTNC	389,766	CBET	384,830	WWOR	357,947
KTNC	397,849	WKBD	389,749	WBNS	366,951	WRNN	323,828
WPSG	383,701	WSBK	372,770	WJW	365,449	CBMT	295,145
WBNS	367,329	WPSG	342,592	WWOR	363,759	WSBK	292,838
WSEE	362,822	WTXF	282,600	WPSG	330,817	WIS	283,524
CKSH	358,227	WSYX	268,567	WSBK	326,879	WPSG	282,999
WKRN	344,610	WIS	251,852	WRNN	308,322	WTXF	277,983
WIS	334,674	WSEE	249,943	WIS	286,035	CFTO	221,729
WTXF	311,642	KGO	243,986	CBMT	283,989	WBNS	218,029
WSYX	271,882	WPGH	240,003	WKBD	275,063	CBLT	215,582
WXIX	250,338	WCMH	227,675	WTXF	264,723	WXIX	210,409
KGO	234,915	KCAL	226,018	WCMH	244,553	WFAA	209,141
KCAL	227,569	WFAA	219,462	WPGH	242,334	KCAL	204,052
WEWS	214,365	WSB	217,466	WNWO	223,773	WJZ	199,706
WLIO	210,817	WXIX	215,010	KCAL	220,548	WSB	189,286
WSB	209,537	CFTO	214,295	WTVG	211,792	KICU	184,076
WFAA	206,167	WBNS	209,862	CFTO	210,700	KCRA	177,950
WJZ	198,532	CBLT	207,673	WXIX	210,010	KGO	163,030
CFTO	195,832	WTVG	198,887	WSB	206,233	WTOL	162,016
WVTV	195,277	WJW	194,976	WEWS	206,217	KCOP	156,769
WCAU	192,862	WJZ	193,844	CBLT	204,409	KBNT	153,443
CBLT	186,918	WDLI	192,423	KGO	204,053	WPVI	152,096
KCOP	182,836	WGGN	190,462	WJZ	202,699	WDIV	146,113
WKYT	181,034	KCRA	183,096	WDLI	198,443	KATV	141,948
KCRA	178,694	WKRN	177,508	WGGN	196,531	WSEE	138,345
WJW	175,242	WNYW	168,483	WLIO	182,461	WNYW	138,329
WNYW	172,492	KCOP	161,408	KCRA	179,549	WSFL	134,771
WDIV	172,276	WCAU	158,051	WSEE	178,395	WVXF	129,187
WPVI	170,925	WXIA	152,498	WWHO	173,913	WVTV	111,360
WWHO	170,805	WPVI	150,458	WSFJ	171,835	KNBC	110,599
WSFJ	167,989	KATV	148,960	WTLW	166,912	WSYX	107,649
KYW	167,161	WDIV	147,991	WCAU	162,964	KTHV	104,016
KWGN	164,294	KTVU	144,125	KCOP	162,340	WKBD	98,264

WTLW	163,304	WVTV	142,364	WPVI	148,186	WTVD	93,541
WXIA	156,030	WKYT	140,070	KTVU	141,259	CHLT	93,357
WTMJ	144,799	WBZL	138,142	KATV	140,891	WCCO	88,334
WISN	144,799	WTMJ	137,896	KICU	139,610	WMCN	88,026
WUSA	132,611	WISN	137,896	WVXF	132,551	KARK	85,028
KARK	126,279	KWGN	133,965	WBZ	128,942	KABC	82,908
KNBC	123,987	WBZ	132,096	KYW	124,867	WRMD	82,831
WBZ	122,892	WBAL	129,939	KWGN	120,298	WBQC	80,842
WNDU	111,973	WRIC	109,972	WBAL	113,748	WLYH	79,191
WHDH	110,025	WTAE	97,355	WRIC	108,800	WCMH	76,084
KCNC	109,673	WLYH	97,028	WCVB	101,595	WTBS	75,417
KMSP	104,625	WDCA	93,856	WXIA	96,673	KUSA	73,309
KMBC	96,707	KCNC	91,060	KBWB	93,941	KCSO	71,689
WGCL	91,243	KUSA	86,739	KMBC	87,628	WDCA	71,660
WBRZ	90,903	WPXI	85,199	WTAE	85,552	WUSA	68,005
KUSA	89,457	WIAT	85,015	WPXI	85,134	WPCW	67,918
WMLW	87,735	KABC	82,731	KABC	84,652	WRC	62,500
WCVB	85,724	WBQC	81,013	WBTW	84,179	WTVF	61,766
WCWB	83,424	WBTW	80,360	WWSI	83,359	KFOR	61,539
WPXI	80,851	WLKY	77,265	KMSP	81,732	KSDK	59,292
WCCO	76,301	WNPA	76,847	WTBS	77,098	KPLR	58,790
WQOW	74,436	WBRC	73,699	WFTC	76,237	WSMV	58,486
WFQX	73,341	WTVQ	73,436	WPTA	70,085	CBFT	58,183
WVTM	69,066	WFTC	73,424	WBRC	70,079	KTSB	57,155
KSDK	68,477	WYTV	71,729	WUSA	69,994	KWTV	57,140
WEAU	67,215	WPTA	70,010	WMAQ	65,650	KZSW	56,198
WPTA	67,156	KPLR	68,747	KCNC	65,213	WBBM	54,952
WTTG	67,142	WRC	67,897	WDRB	64,887	WKMG	54,610
KSHB	66,581	WBRZ	66,651	WYTV	64,620	KEFN	52,927
WFTC	65,765	KVAL	65,373	WRC	64,552	KOIN	52,316
WDRB	63,891	KCBS	60,212	WMLW	64,403	W26AX	51,507
WLTV	62,269	CBFT	59,541	WDTA	61,161	WICZ	51,147
CBFT	60,798	WTTG	58,496	KWTV	60,999	WPCB	47,552
WMAR	59,566	KBNT	57,950	WEYI	60,945	KSTC	46,574
WHIO	58,419	WMLW	57,132	WKMG	59,915	WABC	45,525
KBNT	58,299	KTRK	55,189	KTSB	58,492	WHTM	43,139
WNYS	55,666	WGAL	53,421	WSMV	56,999	WEYI	42,527
WPCB	55,593	WWL	53,132	WBBM	56,242	WPMT	40,574
KOIN	51,842	WVLA	52,324	KSDK	50,898	WYDN	40,389
WAMI	50,370	WICZ	51,935	CBFT	50,547	KSHB	40,275
WABC	45,965	KXAS	49,553	WTVD	48,265	WDAF	40,210
WIXT	44,007	WNYS	47,255	WIBW	43,670	WTTG	39,334
KOMO	42,379	WTAJ	47,073	WPMT	41,007	WBRZ	39,289
KPRC	41,705	KPTV	43,084	WDAF	40,079	WISN	38,278
WDRL	41,395	WDBJ	41,976	WMC	36,773	KPTV	37,487
WFXT	40,708	WAFF	38,282	WTVQ	36,717	WMC	35,179

KCTV	38,317	WBGT	38,182	WTVA	34,306	KABB	35,142
WISC	37,188	KBHK	36,739	WYOU	34,184	WBRC	33,451
KEZI	36,805	KCTV	35,988	WSLS	32,580	WZMY	31,377
WTTV	35,671	WMUR	34,936	WPSD	32,131	KBHK	30,893
KARE	35,415	WYOU	34,106	WTTV	30,830	CJOH	30,887
WFSB	33,368	KMWB	34,023	WITN	29,501	WBKO	29,777
WSLS	33,270	KTWO	32,464	KDSM	29,185	WIAT	26,114
WBKI	28,769	WNDS	31,386	W24BW	28,272	KTXS	26,089
WANE	28,753	WBKO	29,416	WBBJ	28,222	WGNT	16,866
WCAX	28,684	WMBD	29,348	WHP	27,949	WBTW	15,440
WAVE	28,522	WHP	29,266	KRVU	26,369	WTGL	13,562
WFRV	27,161	WQWQ	25,314	WHOI	25,548	KWOG	12,328
WEUX	27,033	WICU	24,297	WWPX	25,139	KWKB	9,521
KNXT	27,024	KTSF	20,097	WAAY	19,200	WWDP	9,323
WTOC	26,021	WTOC	18,424	KWOG	12,370	WILX	8,752
WTVR	21,546	KDNL	18,151	KNXV	11,590	KFTR	8,000
CHCH	19,926	WJTV	16,382	KTXH	10,970	KWCH	7,296
KSFY	17,630	KFRE	10,191	WJLA	10,247	WSWB	6,322
KJRH	15,352	KWWL	9,215	WTGS	8,479	WNUV	6,157
KIMO	10,641	KWKB	9,072	WNYO	6,992	WUVC	5,753
WKCF	8,752	WRJM	7,645	WMBC	6,711	WICD	5,039
WWTV	8,712	WBXX	7,496	WVAG	6,252	KBSI	4,809
KWTX	6,339	KNVA	6,119	WTWO	6,113	KTRE	4,576
KTTW	5,942	CHCH	6,086	KMCY	4,795	WDAY	4,320
KXLY	5,174	WGSA	5,434	CKLT	4,079	WUTR	4,284
KRCR	5,090	KQCA	3,813	KBSD	4,003	WJTS	3,028
KDLH	5,065	KTAB	3,316	KWES	3,609	KDTV	2,503
KBJR	5,065	WMDN	3,047	KULR	3,100	WTVX	2,441
KUPT	4,981	KFSM	3,040	WTJR	3,075	KJCT	1,716
WCCU	4,648	WVNS	2,895	WCYB	2,991	KFTH	1,612
KFSM	3,224	KUPX	2,838	KTBN	2,970	KTAL	1,262
WTVH	2,696	WOGX	2,505	KPOU	2,581	WRBJ	1,223
KTBS	1,240	KCPM	2,274	KIII	2,325	KQEG	1,208
WVSX	869	WTIC	929	WBTR	2,042	CKND	419
CKCO	864	KIFI	906	WICD	1,897	KIDY	393
KUTH	711	CKCO	793	WGKI	1,332	KLWY	334
WWWB*	615	KSAZ	449	KRCA	1,001	KMVT	187
KXLA	499	KLWY	394	WHPX	543	KSCW	151
KNIN	336	KBMY	103	WUVP	252	KNTS	113
KFSN	108	WTPX	44	KFTA	156	KTVZ	96
WNAL	83	WUTB	3	KFSN	63	WPGX	27
				CHEK	49		

2008			2009	
Station	Distant Subscribers		Station	Distant Subscribers
WGN	42,255,759		WGN	43,618,276
CBUT	1,060,182		CBUT	1,077,163
WPIX	728,563		WPIX	710,239
CKSH	574,641		WFME	659,701
WUAB	442,975		CKSH	587,916
WPHL	442,936		WUAB	586,744
WRNN	414,919		WNBC	465,938
WNBC	400,141		WPHL	428,693
WFME	395,328		KTNC	380,038
KTNC	386,263		WWOR	364,133
CBET	366,380		WSEE	316,474
WWOR	328,269		WRNN	312,034
WSBK	306,432		CBMT	291,905
CBMT	300,019		CBET	271,531
KZSW	287,582		CFTO	242,910
WIS	273,961		WXIX	240,582
WTXF	255,088		WTXF	226,510
WXIX	221,619		CBLT	216,364
CFTO	219,552		KCAL	199,785
KGO	217,881		WWME	198,625
WBNS	215,285		WMEU	196,495
CBLT	213,377		WBNS	194,510
KCAL	206,241		WIS	193,234
WFAA	206,022		WJZ	191,688
KTLA	203,400		WSB	182,740
WVVH	183,686		KTLA	174,889
KICU	179,294		KGO	173,551
WJZ	175,847		KICU	172,532
KCRA	167,899		KZSW	165,249
WTOL	161,039		WPVI	151,661
KODF	155,217		WDIV	148,664
WCAU	154,153		WPSG	146,465
WDIV	147,223		WFAA	143,317
WPSG	143,998		KDKA	139,878
KCOP	142,599		WSJP	136,172
WNYW	136,515		WPRU	136,172
WSEE	135,593		WSJX	136,172
KATV	134,820		KYW	133,181
WBAL	130,943		WNYW	132,804
WSFL	124,146		K07TX	130,325
WHDH	119,642		KTHV	128,232
KDKA	117,830		KTVU	126,401
KNBC	115,862		KATV	126,310

WRIC	103,507		WBAL	119,985
WXTV	101,640		CKWS	113,178
WZDC	101,490		KCOP	112,882
WLKY	100,350		WBZ	112,031
WWMT	97,615		WPCW	108,177
WFLD	91,241		WSYX	107,638
WKRN	90,928		WFPA	96,114
CHLT	90,305		WFLD	95,933
WMLW	88,177		WCVB	94,464
W26AX	87,213		WPXI	92,361
WUNI	84,066		WRC	90,427
WBQC	81,250		WPCB	89,113
WBOC	80,151		WWBT	86,860
WKBD	78,697		WMCN	82,665
WPTA	72,174		WTAM	82,117
KUSA	71,463		WTAJ	76,025
WSMV	68,455		KOFY	75,510
WSJX	65,806		KEYT	70,001
WSJP	65,806		WSFL	69,641
WPRU	65,806		WRMD	66,912
WVXF	65,806		CBFT	64,558
KCNC	65,476		WALA	62,665
WXSP	64,930		KFOR	58,089
WZZM	64,253		WOTM	57,149
WXYZ	63,362		WXYZ	56,920
WVTV	63,322		WTTG	56,646
WTBS	60,888		WXIA	56,036
WOTV	60,257		WTVD	54,631
WWTV	59,636		KWTV	53,967
CBFT	59,048		WWL	52,688
WOTM	57,415		WYTV	51,771
KMGH	56,922		WHIO	48,631
WSWG	56,502		KDFW	48,437
KFOR	56,399		WKRN	45,686
KSL	54,025		WFTV	45,257
WIAT	50,131		KMGH	44,747
WMC	48,512		WOWK	44,008
W05BN	45,365		WICZ	43,513
WICZ	44,899		KTRK	42,218
WNCT	43,946		WEYI	41,210
KCCI	43,602		WSWG	38,726
WTMJ	43,066		KTWO	37,798
WHTM	42,311		WDAF	36,107
WZMY	38,505		KZSD	33,901
WPSD	37,100		WQEX	33,414
WTGL	35,308		WYMT	31,309

KSAT	33,752		WHBQ	30,885
WYOU	31,765		WBKO	29,893
KOAT	31,733		WKEF	29,317
WLWT	31,603		WBRZ	28,933
KWQC	31,406		WLS	28,736
WBQD	31,266		WPSD	28,677
KPLC	29,622		WAVE	28,561
WITN	28,793		WTGL	27,629
WWPX	28,518		WAFB	26,187
WMTV	27,768		WRCX	24,035
WHME	26,376		KYTX	21,660
WJEB	23,116		WSTR	14,653
WHO	21,841		KCWY	13,703
WCTI	18,179		WJW	13,118
KLTJ	14,782		WTWO	11,192
KSTV	14,226		KMSS	10,513
KSAW	9,789		KSAW	9,867
WTSP	7,056		WNYS	8,571
KNLJ	6,567		KXVO	8,188
KCVU	4,912		WKAG	7,103
WGFL	4,894		KQDS	5,746
WSST	4,704		KGAN	4,612
KFTR	4,133		WFFF	3,951
WLTX	3,985		KLBK	3,902
WSFX	3,905		KTVW	2,803
CKVU	2,975		WXII	2,686
KWBF	2,665		KOBI	2,417
KPXR	2,146		KFYR	2,256
WTVX	1,868		WTVW	1,382
WTVZ	1,786		KOLO	1,156
WPXP	1,690		KSVI	1,142
WWTO	1,682		KBTX	1,096
KBTX	1,508		KECY	812
KDTN	1,463		WPTZ	416
KFTH	788		KJNP	407
KTMD	788		WWAY	396
KWHB	768		XEPM	356
KPHO	721		CICO32	335
KTVS	451		WLMO	331
KTWB	405		KVEW	213
KWEX	240		KZOU	176
			KVOA	40

APPENDIX D: REGRESSION MODELS - SPECIFICATIONS & RESULTS

Table D-1a: Poisson Regression Results, Model 1 excluding WGN					
Distant Viewers	Coefficient Estimate	Robust Standard Error	Z-score	95% Confidence Interval	
Log of US Quarter Hour Ratings	1.337	0.002	649.99	1.333	1.341
Log of Market Size	0.850	0.001	1004.07	0.848	0.851
Year					
2001	-0.117	0.002	-53.56	-0.121	-0.112
2002	-0.336	0.002	-152.53	-0.341	-0.332
2003	-0.423	0.003	-158.20	-0.429	-0.418
Program Type					
CHILDREN'S SHOW	-0.265	0.019	-13.61	-0.303	-0.227
CHILDREN'S SPECIAL	-0.951	0.089	-10.73	-1.125	-0.777
DAYTIME SOAP	0.826	0.008	107.11	0.811	0.841
FINANCE	-0.680	0.024	-28.16	-0.728	-0.633
FIRST-RUN SYNDICATION	0.366	0.004	81.66	0.357	0.375
GAME SHOW	0.316	0.005	63.43	0.306	0.326
HEALTH	-0.889	0.078	-11.35	-1.042	-0.735
HOBBIES & CRAFTS	0.642	0.007	90.29	0.628	0.656
INSTRUCTIONAL	-22.455	0.107	-210.31	-22.664	-22.245
MINI-SERIES	-0.210	0.059	-3.56	-0.326	-0.094
MOVIE	0.302	0.005	57.79	0.292	0.313
MUSIC	0.177	0.027	6.56	0.124	0.230
MUSIC SPECIAL	-0.412	0.041	-10.09	-0.493	-0.332
NETWORK SERIES	0.451	0.005	90.44	0.442	0.461
NEWS	0.235	0.009	24.75	0.216	0.253
OTHER	-1.091	0.019	-58.45	-1.127	-1.054
PELICULA	-0.140	0.026	-5.29	-0.192	-0.088
PSEUDO-SPORTS	0.928	0.007	130.02	0.914	0.942
PUBLIC AFFAIRS	-0.055	0.022	-2.55	-0.098	-0.013
RELIGIOUS	0.323	0.165	1.96	0.000	0.646
SPECIAL	-0.128	0.010	-12.95	-0.148	-0.109
SPORTING EVENT	2.012	0.013	156.73	1.987	2.038
SPORTS ANTHOLOGY	1.373	0.117	11.71	1.143	1.603
SPORTS-RELATED	-0.420	0.018	-23.55	-0.455	-0.385
SYNDICATED	0.172	0.004	40.79	0.164	0.180
TALK SHOW	0.558	0.004	132.31	0.550	0.566
TEAM VS. TEAM	-0.512	0.071	-7.23	-0.650	-0.373
TV MOVIE	0.113	0.008	14.55	0.098	0.128

Affiliation					
INDEPENDENT	0.078	0.004	18.98	0.070	0.086
CW	-0.047	0.004	-11.09	-0.055	-0.039
NETWORK	-0.132	0.006	-23.86	-0.143	-0.121
Constant	-1.121	0.012	-91.68	-1.144	-1.097

Table D-1b: Poisson Regression Results, Model 1 WGN only					
Distant Viewers	**Coefficient Estimate**	**Robust Standard Error**	**Z-score**	**95% Confidence Interval**	
Log of US Quarter Hour Ratings	1.048	0.003	321.770	1.042	1.054
Year					
2001	0.291	0.006	48.100	0.279	0.303
2002	0.096	0.006	16.250	0.084	0.107
2003	-0.269	0.006	-43.350	-0.281	-0.257
Program Type					
GAME SHOW	-0.401	0.008	-48.660	-0.417	-0.385
MOVIE	0.492	0.006	79.430	0.479	0.504
MUSIC	0.800	0.007	118.910	0.787	0.813
MUSIC SPECIAL	-0.005	0.025	-0.180	-0.054	0.045
NETWORK SERIES	0.627	0.027	22.900	0.574	0.681
OTHER	-1.680	0.008	-201.680	-1.696	-1.664
RELIGIOUS	-1.706	0.030	-57.150	-1.765	-1.648
SPECIAL	-1.457	0.043	-34.090	-1.541	-1.373
SPORTS-RELATED	-1.151	0.019	-59.910	-1.189	-1.113
SYNDICATED	0.459	0.005	97.970	0.450	0.469
TALK SHOW	-0.546	0.009	-63.030	-0.563	-0.529
TV MOVIE	-0.653	0.025	-26.250	-0.702	-0.604
Constant	13.403	0.008	1655.770	13.387	13.419

Table D-2a: Poisson Regression Results, Model 2 and Model 3 excluding WGN					
Distant Viewers	Coefficient Estimate	Robust Standard Error	Z-score	95% Confidence Interval	
Log of Market Size	0.759	0.001	939.10	0.757	0.760
Log of Local Ratings	0.547	0.002	299.61	0.543	0.551
Time of Day (Quarter Hour)					
2	-0.004	0.012	-0.32	-0.028	0.020
3	-0.161	0.013	-12.23	-0.187	-0.136
4	-0.220	0.013	-16.43	-0.247	-0.194
5	-0.473	0.019	-24.56	-0.511	-0.435
6	-0.469	0.020	-23.70	-0.508	-0.430
7	-0.541	0.023	-23.86	-0.586	-0.497
8	-0.596	0.023	-26.00	-0.641	-0.551
9	-0.878	0.027	-32.36	-0.931	-0.825
10	-0.865	0.028	-31.03	-0.920	-0.810
11	-0.974	0.032	-30.59	-1.036	-0.911
12	-0.991	0.033	-29.60	-1.057	-0.926
13	-1.186	0.040	-29.71	-1.264	-1.107
14	-1.174	0.041	-28.61	-1.255	-1.094
15	-1.156	0.042	-27.50	-1.238	-1.073
16	-1.137	0.043	-26.56	-1.221	-1.053
17	-1.125	0.038	-29.40	-1.200	-1.050
18	-1.138	0.039	-29.46	-1.214	-1.063
19	-1.132	0.042	-27.15	-1.214	-1.051
20	-1.150	0.042	-27.19	-1.233	-1.067
21	-1.040	0.018	-56.29	-1.077	-1.004
22	-1.029	0.018	-55.76	-1.065	-0.993
23	-0.589	0.045	-13.08	-0.677	-0.500
24	-0.462	0.048	-9.58	-0.557	-0.368
25	-0.513	0.034	-15.08	-0.580	-0.446
26	-0.578	0.031	-18.76	-0.638	-0.518
27	-0.126	0.034	-3.70	-0.192	-0.059
28	-0.164	0.032	-5.14	-0.226	-0.101
29	0.639	0.020	32.40	0.600	0.677
30	0.542	0.019	27.96	0.504	0.580
31	0.463	0.017	27.41	0.430	0.497
32	0.296	0.016	18.92	0.265	0.327
33	0.341	0.014	25.14	0.314	0.367
34	0.283	0.014	20.89	0.257	0.310
35	0.385	0.014	28.21	0.358	0.412
36	0.345	0.014	25.01	0.318	0.372

37	0.603	0.011	57.43	0.583	0.624
38	0.601	0.011	57.15	0.580	0.621
39	0.594	0.011	56.58	0.574	0.615
40	0.575	0.010	54.77	0.554	0.595
41	0.652	0.010	62.75	0.631	0.672
42	0.645	0.010	61.94	0.625	0.666
43	0.678	0.011	64.01	0.658	0.699
44	0.661	0.011	62.24	0.640	0.682
45	0.459	0.011	42.03	0.438	0.481
46	0.435	0.011	40.41	0.414	0.457
47	0.474	0.011	43.87	0.453	0.495
48	0.451	0.011	41.86	0.430	0.472
49	0.541	0.012	46.60	0.518	0.563
50	0.545	0.012	47.17	0.523	0.568
51	0.613	0.011	54.97	0.591	0.635
52	0.598	0.011	52.89	0.576	0.620
53	0.640	0.012	51.43	0.615	0.664
54	0.624	0.012	50.54	0.600	0.648
55	0.642	0.012	52.71	0.618	0.666
56	0.629	0.012	51.09	0.605	0.653
57	0.630	0.013	47.94	0.604	0.655
58	0.634	0.013	48.48	0.609	0.660
59	0.653	0.012	54.77	0.630	0.676
60	0.609	0.012	51.19	0.586	0.633
61	0.889	0.010	86.67	0.869	0.910
62	0.859	0.010	84.10	0.839	0.879
63	0.902	0.010	88.39	0.882	0.922
64	0.869	0.010	84.92	0.849	0.890
65	0.967	0.010	97.51	0.948	0.987
66	0.939	0.010	94.69	0.920	0.959
67	0.908	0.010	93.11	0.889	0.927
68	0.874	0.010	89.64	0.854	0.893
69	0.928	0.011	81.13	0.906	0.950
70	0.907	0.011	79.39	0.885	0.929
71	0.927	0.010	91.69	0.907	0.947
72	0.891	0.010	88.02	0.871	0.911
73	1.013	0.010	98.21	0.993	1.034
74	0.982	0.010	94.82	0.962	1.002
75	1.000	0.010	100.86	0.980	1.019
76	0.967	0.010	96.58	0.947	0.987
77	1.195	0.010	118.91	1.175	1.214
78	1.173	0.010	116.82	1.153	1.192
79	1.261	0.010	125.88	1.242	1.281
80	1.213	0.010	120.78	1.193	1.232
81	1.403	0.011	125.37	1.381	1.425
82	1.400	0.011	124.88	1.378	1.422

83	1.404	0.011	125.25	1.382	1.426
84	1.388	0.011	123.68	1.366	1.410
85	1.254	0.011	112.28	1.233	1.276
86	1.243	0.011	111.78	1.221	1.265
87	1.229	0.011	111.49	1.208	1.251
88	1.204	0.011	108.93	1.182	1.226
89	0.975	0.012	81.78	0.952	0.999
90	0.931	0.012	78.14	0.907	0.954
91	0.743	0.011	64.86	0.720	0.765
92	0.703	0.011	61.34	0.680	0.725
93	0.567	0.011	53.52	0.546	0.588
94	0.549	0.011	51.70	0.528	0.570
95	0.507	0.011	46.97	0.486	0.528
96	0.460	0.011	42.40	0.439	0.482
Year					
2001	-0.138	0.002	-64.04	-0.143	-0.134
2002	-0.162	0.002	-74.30	-0.166	-0.158
2003	-0.293	0.003	-110.76	-0.298	-0.288
Affiliation					
INDEPENDENT	0.092	0.007	13.78	0.078	0.105
CW	-0.098	0.005	-19.63	-0.108	-0.088
NETWORK	-0.360	0.005	-72.54	-0.370	-0.351
Program Type					
CHILDREN'S SHOW	-0.072	0.019	-3.78	-0.110	-0.035
CHILDREN'S SPECIAL	-1.020	0.090	-11.35	-1.196	-0.844
DAYTIME SOAP	0.865	0.009	94.40	0.847	0.883
FINANCE	-0.297	0.026	-11.54	-0.347	-0.246
FIRST-RUN SYNDICATION	0.572	0.004	127.13	0.563	0.581
GAME SHOW	0.548	0.005	106.95	0.538	0.558
HEALTH	-0.771	0.078	-9.89	-0.923	-0.618
HOBBIES & CRAFTS	0.819	0.007	111.73	0.805	0.834
INSTRUCTIONAL	-21.952	0.103	-214.14	-22.153	-21.751
MINI-SERIES	0.111	0.059	1.87	-0.005	0.227
MOVIE	0.415	0.005	83.29	0.405	0.425
MUSIC	0.234	0.027	8.68	0.181	0.287
MUSIC SPECIAL	-0.164	0.041	-3.99	-0.244	-0.083
NETWORK SERIES	0.641	0.005	118.14	0.631	0.652
NEWS	0.479	0.011	44.86	0.458	0.500
OTHER	-0.340	0.019	-17.90	-0.377	-0.303
PELICULA	0.001	0.027	0.04	-0.053	0.055
PSEUDO-SPORTS	1.037	0.008	136.10	1.022	1.052
PUBLIC AFFAIRS	0.111	0.022	5.14	0.069	0.154
RELIGIOUS	0.947	0.164	5.78	0.626	1.268

SPECIAL	0.150	0.010	14.72	0.130	0.170
SPORTING EVENT	1.850	0.013	141.42	1.824	1.876
SPORTS ANTHOLOGY	2.114	0.118	17.87	1.882	2.345
SPORTS-RELATED	-0.020	0.018	-1.15	-0.055	0.014
SYNDICATED	0.536	0.004	122.48	0.528	0.545
TALK SHOW	0.608	0.004	142.45	0.599	0.616
TEAM VS. TEAM	-0.062	0.070	-0.87	-0.200	0.077
TV MOVIE	0.363	0.008	47.31	0.348	0.378
Constant	-3.667	0.014	-256.93	-3.695	-3.639

Table D-2b: Poisson Regression Results, Model 2 and Model 3 WGN only					
Distant Viewers	**Coefficient Estimate**	**Robust Standard Error**	**Z-score**	**95% Confidence Interval**	
Log of Local Ratings	0.372	0.005	79.76	0.363	0.381
Time of Day (Quarter Hour)					
2	-0.098	0.016	-6.26	-0.129	-0.068
3	-0.407	0.017	-23.57	-0.441	-0.373
4	-0.568	0.018	-32.03	-0.602	-0.533
5	-0.797	0.019	-41.99	-0.834	-0.760
6	-0.845	0.019	-43.56	-0.883	-0.807
7	-0.638	0.022	-29.57	-0.681	-0.596
8	-0.693	0.022	-31.29	-0.736	-0.649
9	-0.676	0.020	-33.54	-0.715	-0.636
10	-0.731	0.020	-35.78	-0.771	-0.691
11	-0.944	0.024	-38.57	-0.992	-0.896
12	-0.995	0.026	-38.53	-1.045	-0.944
13	-1.169	0.023	-51.78	-1.213	-1.124
14	-1.169	0.023	-51.78	-1.213	-1.125
15	-1.351	0.024	-55.97	-1.398	-1.303
16	-1.414	0.023	-60.60	-1.460	-1.368
17	-0.718	0.017	-42.59	-0.751	-0.685
18	-0.705	0.017	-41.95	-0.738	-0.672
19	-0.602	0.016	-37.08	-0.634	-0.570
20	-0.629	0.016	-38.86	-0.661	-0.598
21	-1.057	0.050	-21.21	-1.154	-0.959
22	-1.056	0.051	-20.85	-1.155	-0.957
23	-0.741	0.053	-14.00	-0.845	-0.637
24	-0.912	0.040	-22.65	-0.991	-0.833
25	-3.171	0.016	-193.30	-3.204	-3.139
26	-3.133	0.016	-191.27	-3.165	-3.101
27	-1.331	0.027	-49.62	-1.384	-1.279
28	-1.368	0.027	-50.53	-1.421	-1.315
29	-1.653	0.028	-58.60	-1.709	-1.598
30	-1.709	0.027	-62.42	-1.762	-1.655
33	-1.556	0.076	-20.51	-1.705	-1.408
34	-1.725	0.082	-21.00	-1.886	-1.564
35	-1.262	0.041	-30.74	-1.342	-1.181
36	-1.220	0.039	-31.56	-1.295	-1.144
37	0.283	0.019	15.08	0.246	0.320
38	0.255	0.019	13.79	0.219	0.292
39	0.242	0.018	13.37	0.206	0.277
40	0.191	0.018	10.43	0.155	0.226
41	0.062	0.020	3.05	0.022	0.103
42	0.019	0.021	0.92	-0.021	0.060

43	0.148	0.020	7.28	0.108	0.187
44	0.114	0.020	5.66	0.074	0.153
45	0.690	0.016	41.91	0.657	0.722
46	0.653	0.017	39.32	0.620	0.685
47	0.657	0.016	39.84	0.625	0.689
48	0.653	0.016	39.64	0.621	0.686
49	0.376	0.019	19.35	0.338	0.414
50	0.350	0.020	17.63	0.311	0.389
51	0.392	0.020	19.93	0.354	0.431
52	0.361	0.020	18.25	0.322	0.400
53	0.406	0.020	20.12	0.366	0.446
54	0.414	0.020	20.70	0.375	0.454
55	0.399	0.020	20.00	0.360	0.438
56	0.375	0.020	18.66	0.335	0.414
57	0.680	0.024	28.70	0.634	0.726
58	0.691	0.023	29.56	0.645	0.737
59	0.740	0.023	31.90	0.695	0.786
60	0.724	0.024	30.13	0.677	0.771
61	0.791	0.020	39.10	0.751	0.831
62	0.794	0.020	38.95	0.754	0.834
63	0.798	0.020	39.57	0.759	0.838
64	0.784	0.020	38.93	0.744	0.823
65	0.972	0.015	64.03	0.943	1.002
66	0.986	0.015	65.40	0.957	1.016
67	0.901	0.015	59.68	0.871	0.931
68	0.878	0.015	57.91	0.848	0.907
69	0.616	0.020	30.90	0.577	0.655
70	0.610	0.020	30.08	0.570	0.650
71	0.681	0.016	42.83	0.650	0.712
72	0.632	0.016	39.59	0.600	0.663
77	0.718	0.034	21.13	0.651	0.785
78	0.728	0.032	22.93	0.666	0.791
79	0.770	0.034	22.82	0.704	0.836
80	0.761	0.034	22.07	0.693	0.829
81	0.801	0.034	23.23	0.734	0.869
82	0.786	0.035	22.26	0.717	0.856
83	0.787	0.034	23.05	0.720	0.854
84	0.753	0.034	22.09	0.686	0.820
89	-0.971	0.014	-69.23	-0.999	-0.944
90	-26.428	0.259	-102.21	-26.935	-25.921
91	-0.171	0.022	-7.66	-0.214	-0.127
92	-0.145	0.023	-6.28	-0.190	-0.100
93	0.049	0.023	2.18	0.005	0.094
94	0.060	0.023	2.64	0.015	0.105
95	0.078	0.024	3.31	0.032	0.125
96	0.063	0.024	2.67	0.017	0.110

Year					
2001	0.213	0.005	45.19	0.203	0.222
2002	0.235	0.005	50.80	0.226	0.244
2003	-0.021	0.005	-3.95	-0.032	-0.011
Program Type					
GAME SHOW	0.412	0.014	29.47	0.385	0.439
MOVIE	0.832	0.006	128.67	0.819	0.845
MUSIC	0.692	0.008	90.84	0.677	0.707
MUSIC SPECIAL	0.544	0.032	16.74	0.480	0.607
NETWORK SERIES	1.005	0.024	41.10	0.957	1.052
OTHER	-0.806	0.009	-85.21	-0.824	-0.787
RELIGIOUS	-0.839	0.049	-17.08	-0.935	-0.743
SPECIAL	-1.144	0.040	-28.96	-1.222	-1.067
SPORTS-RELATED	-0.423	0.020	-21.17	-0.462	-0.384
SYNDICATED	0.754	0.006	130.77	0.743	0.765
TALK SHOW	-0.252	0.009	-26.82	-0.271	-0.234
TV MOVIE	0.084	0.024	3.52	0.037	0.131
Constant	10.163	0.016	646.98	10.132	10.193

Table D-3: Regression Results, Subscriber Panel Data-Analysis (Fixed Effect)					
Log Distant Subscribers	**Coefficient Estimate**	**Robust Standard Error**	**t-statistic**	**95% Confidence Interval**	
Prior Year Log Distant Viewership	0.324	0.191	1.70	-0.053	0.702
Prior Year Share IPG	-2.334	2.664	-0.88	-7.607	2.940
Year					
2006	0.043	0.041	1.06	-0.037	0.124
2007	-0.174	0.057	-3.06	-0.287	-0.062
2008	-0.138	0.059	-2.34	-0.254	-0.021
2009	-0.189	0.070	-2.68	-0.328	-0.049
Constant	7.180	3.302	2.17	0.644	13.715

DECLARATION OF JEFFREY S. GRAY

I declare under penalty of perjury that the foregoing testimony is true and correct, and of my personal knowledge.

Executed on July 8th, 2014

Jeffrey S. Gray, Ph.D.

TAB B

Before the
COPYRIGHT ROYALTY JUDGES
Washington, D.C.

In the Matter of		
Distribution of the	Docket No.	2012-7 CRB SD 1999-2009 (Phase II)
1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, and 2009 Satellite Royalty Funds		

TESTIMONY OF JEFFREY S. GRAY, Ph.D.

Amended July 8, 2014

Corrected July 24, 2014

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I. QUALIFICATIONS

I, Jeffrey Gray, am the founder and President of Analytics Research Group, LLC ("ARG"). My firm provides expert analysis concerning economic, statistical and data issues.

I received training in economics and statistics at the University of Pennsylvania, where I earned a Ph.D. in economics. In 1991, I was appointed to a one-year position on the staff of the President's Council of Economic Advisers, where I concentrated on the economic impact of government policies and regulation. From 1993 to 1997, I served on the faculty of the University of Illinois, where I taught graduate and undergraduate courses covering survey techniques, demand analysis, labor economics, and statistics. My research has been published in some of the top peer-reviewed journals in the economics profession including *The American Economic Review*. I have received grants to pursue my research from the U. S. Department of Labor, the U. S. Department of Agriculture, and the Research Board of the University of Illinois. I have presented my research findings before a variety of seminars at universities, meetings of professional societies and conferences on specialized topics in the United States and abroad. Throughout my professional career I have been asked to serve as a referee for leading economics journals, such as *The American Economic Review* and the *Review of*

Economics and Statistics, concerning the appropriate application of economics and statistics.

I have served as a consultant for companies, law firms, and government agencies on a variety of economic and statistical issues related to antitrust, copyright and patent infringement, and complex commercial disputes. My consulting work has included analyzing economic markets as well as valuing copyrighted material and assessing efficient price and advertising levels. I have been engaged by cable system operators to analyze the content and viewership of certain channels and by music performance rights owners to determine the economic value of the right to perform copyrighted music. I have provided expert testimony before the Copyright Royalty Judges ("Judges"), as well as in state, federal and international courts, and have presented my research methodology and analytical findings before the Securities and Exchange Commission, the Texas Commissioner of Insurance, and the New York and Massachusetts State Offices of the Attorney General.

My *curriculum vitae*, which includes a list of my publications in the last ten years, and a list of cases in which I have testified in the last four years, is attached as Appendix A. This report is based upon information currently available to me; I reserve the right to supplement this report should additional information be made available.

II. EXECUTIVE SUMMARY

1. Cable system operators ("CSOs") and satellite carriers are both retransmitters of programming who face the same tasks of selecting and evaluating programming to retransmit. They face the same economic motivations in attempting to attract and maintain subscribers.
2. My analysis in this docket is very similar to my analysis of the 2004-2009 Phase II cable royalty distribution proceeding, the principal difference being that retransmitted network programs are compensable for satellite retransmission purposes while they are not for cable.
3. Programming belonging to the claimants represented by the Motion Picture Association of America, Inc. ("MPAA") consists of thousands of unique programs, many retransmitted multiple times, over the years 2000 to 2009. These programs represented millions of valuable programming minutes retransmitted by satellite carriers each year.
4. This programming is valuable insofar as it is valued by satellite carrier customers. The most direct and reasonable approach measuring the extent to which satellite subscribers value programming is viewing. Program viewership therefore provides the measure of program market value, especially because the allocation of Program Suppliers' royalties in this Phase

II proceeding involves examination of relatively homogenous programming. Relying upon multiple data sources and regression analysis, it is possible to estimate viewing minutes of programs on distantly retransmitted signals.

5. Following the submission of my original testimony on May 9, 2014, I received a list of program titles claimed by Independent Producers Group ("IPG") within the Program Suppliers category for this Phase II proceeding. In each satellite royalty year from 2000 to 2009, approximately one-half to three-quarters of the unique program titles claimed by IPG were already claimed by MPAA. I understand that MPAA has, or will, contest the validity of these claimed representations by IPG. I also understand that MPAA will contest the validity of IPG's claimed representation of many of the remaining program titles not also claimed by MPAA. Nonetheless, for the purposes of calculating the relative viewing shares between IPG and MPAA programming, I assume that all of the program titles claimed by IPG are validly attributable to IPG for all of the 2000-2009 satellite royalty years, except that in each instance where both MPAA-represented Program Suppliers and IPG claim the same title, I attribute such a title to MPAA. I will update my calculations following resolution of claimant and title issues between MPAA-represented Program Suppliers and IPG.

6. Based on the assumptions in No. 3 above, I calculated MPAA's share of total program volume (*i.e.*, based on minutes of airtime) and MPAA's share of program viewing on a random selection of distant signal channels each year from 2000 to 2006 and all distant signal channels from 2007 to 2009. Even before confirming the validity of all of IPG's claims, I find:

    - MPAA represented compensable programs accounted for 97.70%-99.41% of total program volume over the years 2000-2009.
    - MPAA represented compensable programs accounted for 97.74%-99.86% of total program viewing over the years 2000-2009.

7. An econometric analysis of the number of subscribers and Program Supplier programming mix demonstrates that there is no statistically significant difference in how MPAA and IPG programs affect subscriber growth. Therefore, viewership share is an economically sound measure of relative market value. Consequently, MPAA's calculated satellite royalty shares are 97.74% in 2000, 97.92% in 2001, 97.77% in 2002, 99.59% in 2003, 99.86% in 2004, 99.70% in 2005, 99.70% in 2006, 99.72% in 2007, 99.72% in 2008, and 99.53 in 2009%. MPAA's calculated royalty shares will increase should it be determined that some IPG-claimed programming was improperly claimed by IPG.

III. Background And Overview of Royalty Allocation Process

I understand that the purpose of this Phase II proceeding is to allocate the 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, and 2009 satellite royalty funds ("2000-2009 Satellite Royalties") within the syndicated and network series, movies, specials, and non-team sports category (commonly known as the "Program Suppliers" category) between claimants represented by MPAA and claimants represented by IPG. These satellite royalty funds follow from the compulsory license established through Section 119 of the Copyright Act ("Section 119"). The compulsory license allows satellite carriers to retransmit broadcast television signals out-of-market (*i.e.*, on a distant basis) without the need to negotiate private license agreements with the multitude of copyright owners whose programs air on those signals. Section 119 sets the rates for the compulsory license fees paid by the satellite carriers, and these statutorily-set fees are subject to periodic adjustments. The licensing fees, which are paid by the satellite carriers to the Copyright Office, are based primarily on the type of distant stations each satellite carrier chooses to carry. After collecting the royalty payments, the Copyright Office distributes them among copyright owners of eligible compensable programs contained in the distant signals (or their representatives),[1] either by agreement among

[1] Eligible compensable programs are network and non-network broadcast programs aired on simultaneously retransmitted distant signals during 2000-2009 for which the copyright owner or its representative filed a timely and valid claim. Unless otherwise stated, the television programs discussed in my testimony are compensable programs within the Program Suppliers category.

the claimants, or pursuant to the determination in a satellite royalty distribution proceeding held before the Judges.

The satellite royalty distribution proceedings occur in two phases. In Phase I, the Judges determine how to allocate royalties among five broad categories of broadcast programming claimants.[2] In Phase II, royalties are divided among individual claimants or their representatives *within* each of the eight broad program categories. I understand that with respect to the 2000-2009 Satellite Royalties, MPAA has resolved the controversies with all of the Program Suppliers claimants except IPG.

The Program Suppliers category is comprised of producers and/or distributors of network and syndicated series, movies, specials, and non-team sports, excluding devotional programs. Syndicated series, movies, and specials are defined for cable compulsory license royalty purposes as including (1) programs licensed to and broadcast by at least one U.S. commercial television station during the calendar year in question, (2) programs produced by or for a broadcast station that are broadcast by two or more U.S. television stations during the calendar year in question, and (3) programs produced by or for a U.S. commercial television station that are comprised predominately of

[2] For 2000 and 2001 there were six broad categories of programming: (1) Program Suppliers; (2) Joint Sports Claimants; (3) Broadcaster Claimants Group; (4) Public Television Claimants; (5) Devotional Claimants; and (6) Music Claimants. Beginning with the 2002 royalty year, the Public Television Claimants discontinued their participation as a claimant in Section 119 proceedings.

syndicated elements.[3] Programming compensable under Section 119 also includes programs licensed to or produced by a network and retransmitted by satellite carriers.[4] Examples of Program Suppliers programs at issue in this satellite proceeding include both syndicated programs, game shows, movies, and non-team sports such as *Judge Judy*, *3rd Rock From the Sun*, *Jeopardy!*, *Anchorman: The Legend of Ron Burgundy*, and *NASCAR Racing,* as well as network programs such as *NBC Nightly News, All My Children, and NCIS*.[5]

MPAA represents copyright owners of a variety of programs within the Program Suppliers category. In particular, I understand that there are no types of programming in the Program Suppliers category not offered as MPAA-represented programming.[6]

I understand further that this is the first Phase II proceeding regarding satellite royalty funds in the Program Suppliers category. All prior satellite distributions were resolved via settlement among the Program Suppliers parties. However, with respect to cable royalty funds, there have been a number of Phase II proceedings to determine the

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[3] *See* MPAA-Represented Program Suppliers' Written Direct Statement, Vol. II, Designated Prior Testimony, at Tab B, Written Rebuttal Testimony of Marsha E. Kessler, Addendum B (filed May 15, 2013).

[4] *See* 17 U.S.C. § 119(a)(2)(A).

[5] A list of MPAA-represented compensable programming in the instant proceeding is attached to the Direct Testimony of Jane V. Saunders as Appendix B.

[6] *Ibid.*

distribution of cable royalty funds. In each of these prior cable Phase II final awards since 1979, MPAA-represented Program Suppliers have constituted the vast majority of program owners and have received the overwhelming majority of the cable royalties awarded to the Program Suppliers category.[7] MPAA-represented Program Suppliers have received, *on average*, over 98% of each cable Phase II award in the Program Suppliers category.[8] MPAA received these awards in years where multiple Program Suppliers representatives sought royalty awards. In the recently concluded 2000-2003 cable Phase II Proceeding, IPG was the only other Program Suppliers litigant against MPAA, and MPAA received, on average, 99.49% of each annual Phase II award.

IV. Economic Value of Programming: Relative Market Value Depends on Viewership

At issue in the current Phase II proceeding is how to divide the 2000-2009 Satellite Royalties attributable to the Program Suppliers category between MPAA-represented and IPG-represented claimants. The total amount of funds available to the

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[7] The 1997 Phase II cable royalty CARP decision awarded 99.788% of the Program Suppliers royalties to MPAA-represented Program Suppliers. That decision was vacated by the Librarian of Congress (69 Fed. Reg. 23821, 23822 (Apr. 30, 2004)).

[8] MPAA Phase II awards by cable royalty year were 96.3% in 1979 (49 Fed. Reg. 20048 (May 11, 1984)), 96.9% in 1980 (48 Fed. Reg. 9552 (Mar. 7, 1983)), 96.9% in 1981 (49 Fed. Reg. 7845 (Mar. 2, 1984)), 97.5% in 1982 (49 Fed. Reg. 37653 (Sept. 24, 1984)), 98.2% in 1983 (51 Fed. Reg. 12792 (Apr. 15, 1986)), 98.475% in 1984 (52 Fed. Reg. 8408 (Mar. 17, 1987)), 99.175% in 1985 (53 Fed. Reg. 7132 (Mar. 4, 1988)), 98.5% in 1986 (54 Fed. Reg. 16148 (Apr. 21, 1989)), 99.788% in 1997 (66 Fed. Reg. 66433 (Dec. 26, 2001), *subsequently vacated*, 69 Fed. Reg. 23821 (Apr. 30, 2004)), 98.84% in 2000 (78 Fed. Reg. 64984 (Oct. 30, 2014), 99.69% in 2001 (*Id.*), 99.64% in 2002 (*Id.*), 99.77% in 2003 (*Id.*).

Program Suppliers category was fixed following a combination of litigation and settlement at the Phase I portion of the distribution proceeding.[9] The criterion for dividing the royalty pool among claimants is the "relative market value" of the copyrighted programs.[10]

A. Application of the Relative Market Value Standard

Relative market value corresponds to the price at which the right to retransmit a program carried on a distant broadcast signal would change hands between a willing buyer (a satellite carrier) and a willing seller (a copyright owner), neither being under any compulsion to buy or to sell and both having reasonable knowledge of relevant facts.[11] The "willing buyer" in this hypothetical negotiation is the satellite carrier because it chooses which distant signal channels to carry. Like CSOs, satellite carriers bundle distant signal channels with cable channels, local broadcast channels and pay-per-view channels in different packages and make the packages available to existing and

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[9] The Phase I distribution of the 2004 and 2005 cable royalty funds was litigated before the Judges. *See* 75 Fed. Reg. 57063, 57079 (Sept. 17, 2010). Following the proceeding certain of the Phase I Parties appealed the Judges' decision to the D.C. Circuit Court of Appeals. While that appeal was pending the Phase I Parties reached a confidential Phase I settlement regarding the distribution of the 2004-2009 cable royalties. *See* 78 Fed. Reg. 50113 (Aug. 16, 2013).

[10] *See generally* 75 Fed. Reg. 57063 (Sept. 17, 2010).

[11] This definition is consistent with the definition of *fair market value* written by the U.S. Supreme Court: "The fair market value is the price at which the property would change hands between a willing buyer and a willing seller, neither being under any compulsion to buy or to sell and both having reasonable knowledge of relevant facts." *United States v. Cartwright*, 411 U. S. 546, 93 S. Ct. 1713, 1716-17 (1973).

potential subscribers to choose from at varying prices. And similar to CSOs, satellite carriers base their channel and bundling decisions on attracting and retaining subscribers while other cost considerations factor into their decisions regarding which distant channels to retransmit and how to bundle them.[12]

Satellite carriers' concerns of how to bundle channels are relevant to Phase I Proceedings. However, programming at issue within the Program Suppliers category in this Phase II proceeding is more homogenous than all of the programming at issue in the Phase I proceeding. As a result, the incremental costs to satellite carriers associated with the carriage of Program Suppliers programs and the differential impact on subscriber growth of these programs can reasonably be assumed to be similar.[13] Analysis in the Phase II proceeding should therefore concentrate more on quantifying

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[12] As the Judges noted in the 2004-2005 Cable Phase I Decision, "The rationale for the cable operator's decision concerning which channels to group in any tier offering and at what price, may depend not only on the impact on direct subscriber revenues, but also on such factors as advertising revenues associated with cable network channels, the relative license fee costs of various cable network channels, physical capacity constraints on the number of channels that can be transmitted over a particular cable system and even the direct ownership interests of the cable system in programming content on a given cable network." 75 Fed. Reg. 57063, 57066 (Sept. 17, 2010). This rationale also applies to satellite carriers who, like CSOs, are program retransmitters and face the same economic goal as CSOs and earn revenues by increasing subscriptions and selling national advertising.

[13] The Judges noted in the 2000-2003 Cable Phase II Decision, that "[t]his relative homogeneity suggests that a rational CSO would not be as concerned with whether different programs would attract different audience segments (compared with more heterogeneous programming) and therefore such a CSO would rely to a greater extent on absolute viewership levels." 78 Fed. Reg. at 64996. The programs at issue in this Satellite Phase II proceeding are similarly homogeneous as they consist of the same types of programs considered in the Cable Phase II proceeding with the addition of the those same types of Program Suppliers programs airing on ABC, CBS, or NBC.

subscriber viewing patterns in determining relative market value because in Phase II one would be looking at more homogenous goods within a particular Phase I category.

The relative market value of a program in this Phase II proceeding ultimately depends upon the consumption of the programming as measured by its level of viewing. As explained by actual Program Suppliers copyright owners, audience size – as measured by viewership – is central when making licensing deals with broadcast stations and cable networks in the world outside the compulsory licensing scheme.[14] Moreover, in an attempt to attract and retain customers, satellite carriers want to carry programming with high viewership such as syndicated television series that originally attracted a loyal following in their network showing and continue to do so in syndication.[15] Satellite carriers also carry genres of first-run syndicated programs that they believe will garner satisfactory audience levels.[16]

Since this proceeding involves allocating a fixed royalty pool as part of a compulsory licensing scheme, it is entirely appropriate to consider pertinent information concerning the relative economic value of programming, namely, program

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[14] *See* Docket No. 2001-8 CARP CD 98-99, Written Direct Testimony of Babe Winkelman, p.7 (filed December 2, 2002) and Docket No. 2007-3 CRB CD 2004-2005, Written Direct Testimony of Alex Paen, pp. 11-12 (filed June 1, 2009).

[15] *See* Written Direct Testimony of Alex Paen, p. 12.

[16] *See id.* at pp. 5-6, 9-10.

consumption as measured by actual program viewing. Purposefully ignoring actual viewing or ratings could lead to copyright owners of valuable programming receiving disproportionately small royalty awards.

B. Measuring Relative Market Value: Volume, Viewership, and Subscribers

Subscriber preferences are revealed by which distant stations and programs they choose to watch. Subscriber preferences may also be revealed by whether they continue to subscribe to the satellite system. Below, I discuss in turn three measures of value: volume, viewership, and subscriber count.

1. Volume

Holding costs constant, satellite carriers will choose to carry distant signals with programming the satellite carriers can add to their lineup to attract and retain as many subscribers as possible. In theory, the economic-optimizing (*i.e.,* rational) satellite carrier will choose to carry distant signals with the most preferred programming airing at the most preferred times. The total volume of minutes of programming retransmitted by satellite carriers effectively represents the amount of programming purchased by the satellite carriers. Therefore, total program volume represents the economic-optimizing satellite carrier choices and provides a measure of the relative economic value of the programming to the satellite carriers.

While total program volume, or the total number of minutes of programming retransmitted on distant signals, provides useful information concerning the relative value of programming to satellite carriers, the measure alone is not sufficient. In general, the value of programs to the satellite carrier and its subscribers may differ depending on the time slot during which the programs are shown. A 30-minute program shown during primetime might be more valuable to a satellite carrier and its subscribers than an hour-long program shown in the middle of the night. Moreover, programs of identical duration shown at the same time of day may have very different values to satellite carriers and their subscribers. That is, programming volume alone does not convey a complete picture of the relative value of the programs.

2. Viewership

Audience size, which is determined through program viewership, is the primary interest of programmers and therefore the most direct measure of a program's relative value.[17] From the satellite carrier's perspective, the more a program attracts subscribers to watch and keep coming back to watch, the more valuable the program is to the satellite carrier's net-revenue maximizing goal of retaining and growing subscriber count. From the subscriber's perspective, relatively low viewership of a given program reflects the value ascribed to that program by cable subscribers and satellite

[17] Media Programming: Strategies and Practices, 8th ed., S.T. Eastman and D.A. Ferguson, 2009, p. 40.

carriers. Absent the bundling of programs, economic theory implies that a program with no viewership will most likely not continue to be carried.

Program viewership as a measure of relative market value is consistent with economic theory: a satellite carrier's willingness to pay for a particular program is a function of that program's contribution to the satellite system's ability to attract and retain subscribers and thereby maximize net revenue.

3. Subscriber Count

While viewership is proportional to value, a question from the net revenue maximizing satellite carrier's perspective is whether similar viewership levels of different programs are associated with different levels of subscriber retention and attraction. All else equal, programs that are responsible for more subscriber growth – both retaining current subscribers as well as encouraging new subscribers – are more valuable to satellite carriers than programs promoting less subscriber growth. The relationship between program viewing and subscriber count may be of particular interest when analyzing the relative market value as part of the Phase I proceeding. In this Phase II proceeding, however, all the MPAA and IPG represented programs at issue are within the same program category. As described above, we do not expect to see programs in this same category with similar viewership levels being associated with different

changes in satellite system subscribers. Nonetheless, I statistically examine whether MPAA-represented or IPG-represented programs affect subscriber growth differently.

My estimation approach to determine relative market value of MPAA and IPG compensable programming is consistent with the economic arguments described above. I apply a three-step approach:

1. First, I calculate the relative volume of MPAA programming and IPG programming. This provides a good, but imperfect indicator of relative value of the two sets of programs.
2. Second, I calculate the relative viewership of MPAA programming and IPG programming. As described above, this is the most direct measure of relative value: if costs are deemed constant, and without taking subscriber growth into account, then, the higher subscriber viewership will suggest higher relative market value of the programming.
3. Third, I examine statistically whether MPAA and IPG programming affect subscriber growth differently. Given that this is a Phase II proceeding and the consequent similarity of the type of programming represented by MPAA and IPG, if there is no meaningful difference in how the two sets of programs affect subscriber growth, then viewership share is the most economically sound measure of relative market value.

C. Data Relied Upon to Measure Relative Market Value of Phase II Programming

I rely upon Nielsen ratings data and viewing data in combination with Tribune Media Services ("Tribune") data to study the volume and viewing information of compensable programs from 2000 through 2009. I also rely upon Cable Data Corporation ("CDC") data that includes information on the number of satellite system subscribers of each distantly retransmitted signal analyzed.

These data are described in the subsections below. In addition to the Tribune and Nielsen data, I was also provided lists of MPAA-represented programs for each year from 2000 through 2009.

1. Nielsen Data

Nielsen is a well-regarded and highly-used source of audience measurement information in the television industry. Prior CARP Reports have concluded that Nielsen data provides "relevant" and "reliable" measures of the number of people viewing programs retransmitted on distant signals.[18] I rely on three types of Nielsen data: (1) Nielsen Diary data for 2000-2003, (2) Nielsen Local Ratings data for 2000-2009, and (3) Nielsen National Viewing data for 2004-2009.

[18] *See, e.g.*, 55 Fed. Reg. 5647 (Feb. 16, 1990); 1998-99 Cable Phase I CARP Report (Oct. 21, 2003), at 44; 1990-92 Cable Phase I CARP Report (May 31, 1996), at 84.

a. Nielsen Diary Data

The Nielsen Diary data is obtained from information collected by Nielsen from households throughout the United States during "sweeps" months.[19] Selected households for each sweeps week complete diaries of the stations watched in their home, for up to five television sets, for a one-week period.[20] MPAA provided Nielsen with a list of sample stations based on satellite royalty fees generated by each station and the number of distant subscribers receiving the distantly retransmitted stations, each year from 2000 to 2003.[21] For each of these stations Nielsen calculated the amount of viewing to each station for each quarter-hour throughout the sweeps months.[22] These Nielsen Diary data capture all viewing by subscribers (to the sample stations) for 24 hours per day during the sweeps months.

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[19] Nielsen processes diaries from households across the country covering the February, May, July, and November "sweeps months."

[20] Information is collected for 24 hours a day over the seven-day period, reflecting programs viewed within each quarter hour segment.

[21] Nielsen also provided data for the first quarter of 2004 based on the 2003 diary sample stations. For ease of exposition I refer to the years Nielsen Diary data is available as 2000-2003. No Nielsen diary data is currently available covering the remainder of year 2004 through 2009. *See* the Direct Testimony of Jane V. Saunders for more detail regarding the 2000-2003 diary sample stations.

[22] *See* 2000-2003 Cable Phase II, Direct Testimony of Paul Lindstrom ("Lindstrom Testimony") at 4-5 for more detail describing methodology. I understand that MPAA has included the Lindstrom Testimony in its Written Direct Statement in this proceeding as prior designated testimony.

b. Nielsen Local Ratings Data

Nielsen Local Ratings data is collected by electronic meters attached to television sets in a random sample of households in selected geographic markets across the U.S. ("Nielsen metered markets").[23] These data include information on the number and percentage of households in the station's local market tuned to the station for each quarter hour for every day throughout the year.

c. Nielsen National Viewing Data

Similar in collection methodology to the Nielsen Local Ratings data, Nielsen National Viewing data is collected by electronic meters attached to television sets in a random sample of households in Nielsen metered markets. These data include Nielsen's calculations each year from 2000 to 2009 of the number and percentage of households watching television broadcasts over fifteen-minute intervals throughout the day. This information is provided on both a weekday and weekend basis for all broadcast stations as well as on a station affiliation basis.

2. Tribune Data

The Tribune data consists of a library of information of each program airing throughout each day, including when the program aired; the station the program aired on; whether it was local, network, or syndicated; the program title; the episode title (if applicable); the type of program (movie, game show, etc.); and so on. I excluded as

[23] A list of U.S. metered markets is contained in Appendix Table B.

non-compensable programs airing on WGN's local feed ("WGN") that were not simultaneously broadcast on WGN's national feed ("WGNA").

3. CDC Data

The CDC data originate from statements of accounts ("SOAs") that satellite carriers are required to file with the Licensing Division of the Copyright Office semi-annually. These data include information regarding the distant signals carried, the number of subscribers to each signal, and the fees generated by each signal during years covered by this proceeding.[24]

Based on the CDC data, the number of stations that were distantly retransmitted by satellite carriers varied each year from only 62 in 2008 to over 650 in 2006.[25] Due to cost considerations in obtaining Nielsen Local Ratings data and Tribune data described above for all stations distantly retransmitted by satellite carriers from 2000 to 2009, I implemented a stratified random sampling methodology in each year from 2000 to 2006, when there were over 80 distantly retransmitted stations.[26] I requested Nielsen and Tribune data for these randomly selected stations each year as well as data for all

[24] *See* 2004-2009 Cable Phase II, Direct Testimony of Jonda Martin.

[25] Consistent with Nielsen's ratings and viewing measurement approaches, split signals such as KABC and KABC-DT are aggregated and considered a single station.

[26] A list of sampled stations for the local ratings data is contained in Appendix Table C. I implemented a random sampling methodology, stratified by number of distant subscribers of the stations.

distantly retransmitted each year from 2007 to 2009.[27] Each year's list included both large and small stations in terms of the number of distant subscribers as well as fees generated. [28]

D. Economic Analysis: Estimating and Imputing Distant Viewing

To determine the relative market value of copyrighted Program Suppliers programs that aired on stations that were distantly retransmitted by satellite carriers, one would calculate the relative viewing of those programs on a distant basis. I am able to provide a reasonable estimate of relative distant viewing levels relying upon the data sources described in the previous section. In particular, I calculate the mathematical relationship between viewing levels for the years the data is available and various program characteristics during those years. I then extrapolate that mathematical relationship to estimate distant viewing for compensable programs each year from 2000 to 2009.

E. Relative Market Value of MPAA versus IPG Programming

A review of the various datasets described above demonstrates the breadth of MPAA programming and the extent to which it is retransmitted in distant markets by satellite carriers.

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[27] As reported by CDC, there were 66, 62, and 72 distantly retransmitted stations in 2007, 2008, and 2009, respectively. Thus, for these years, I requested data for all the stations rather than select samples.

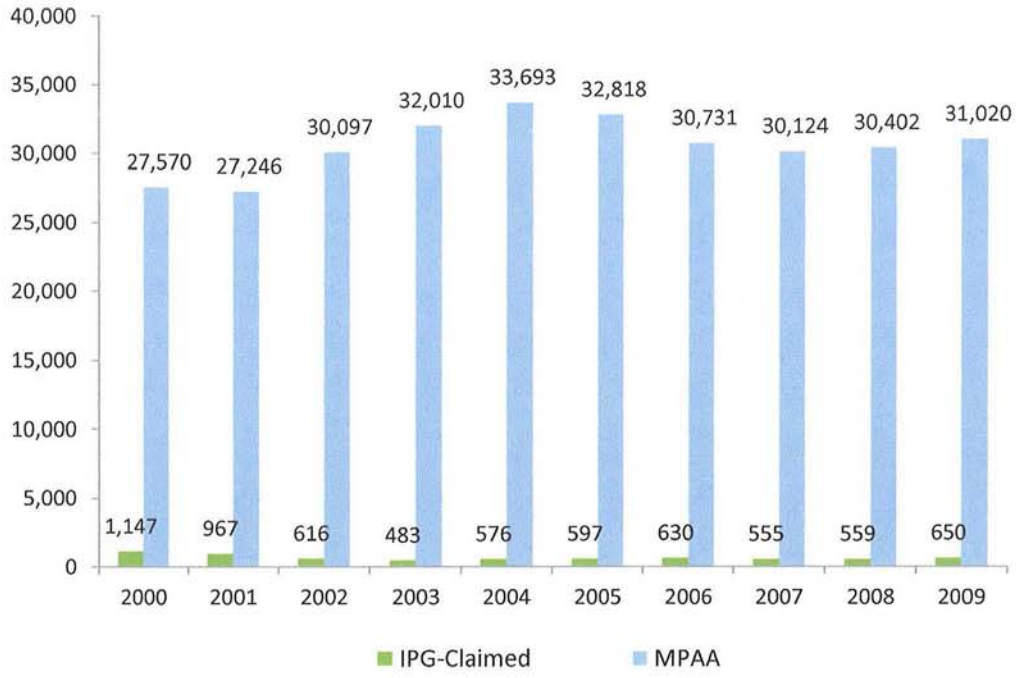
[28] Nielsen provided Local Ratings data for those stations in Nielsen metered markets.

1. Program Retransmissions and Volume Statistics

The charts below present summary statistics concerning the number of MPAA and IPG-claimed compensable programs and associated programming volume that aired on the 80 randomly sampled distantly retransmitted stations for each year between 2000 and 2006 and the universe of stations each year from 2007 to 2009. Chart 1 shows that each year from 2000 to 2009, between 27,246 and 33,693 unique MPAA compensable programs aired on these randomly sampled stations.[29] In contrast, only between 483 and 1,147 unique IPG-claimed compensable programs aired on these stations over the same time period. Therefore, on average, between 2000 and 2009, MPAA-represented approximately 45 times as many unique programs as did IPG.

[29] I define a "unique program" at the episode level. Thus, e.g., different episodes of the series *The Simpsons* are each defined as a unique program.

Chart 1: MPAA and IPG-Claimed Unique Compensable Programs Airing on Random Sample of Retransmitted Stations 2000 to 2006 and on All Retransmitted Stations 2007 to 2009



In addition to representing the copyright owners of far more programs than IPG, the MPAA-represented programs were retransmitted more often than IPG-represented programs. Chart 2 below shows that the total number of annual MPAA-represented program retransmissions varied from 399,658 in 2008 to 588,588 in 2001 compared to IPG-claimed retransmissions for the same period which varied from 2,921 in 2008 to 15,223 in 2000. Meaning, on average, each of MPAA's programs was retransmitted

approximately 17 times while each IPG-claimed program, on average, was retransmitted approximately 10 times.[30]

Chart 2: Compensable Retransmissions on Random Sample of Retransmitted Stations 2000 to 2006 and on All Retransmitted Stations 2007 to 2009

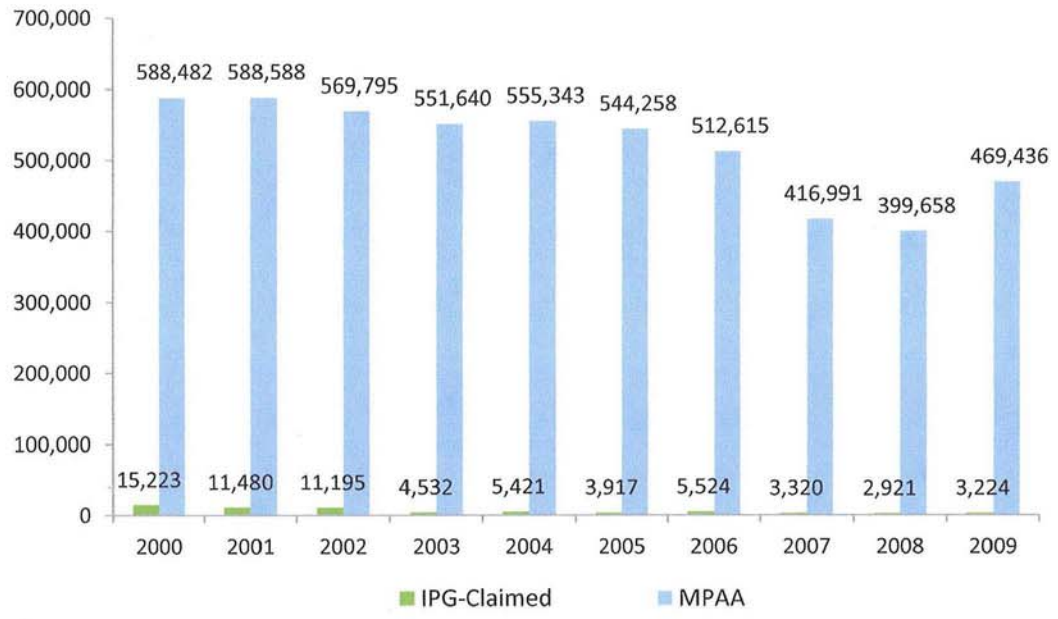
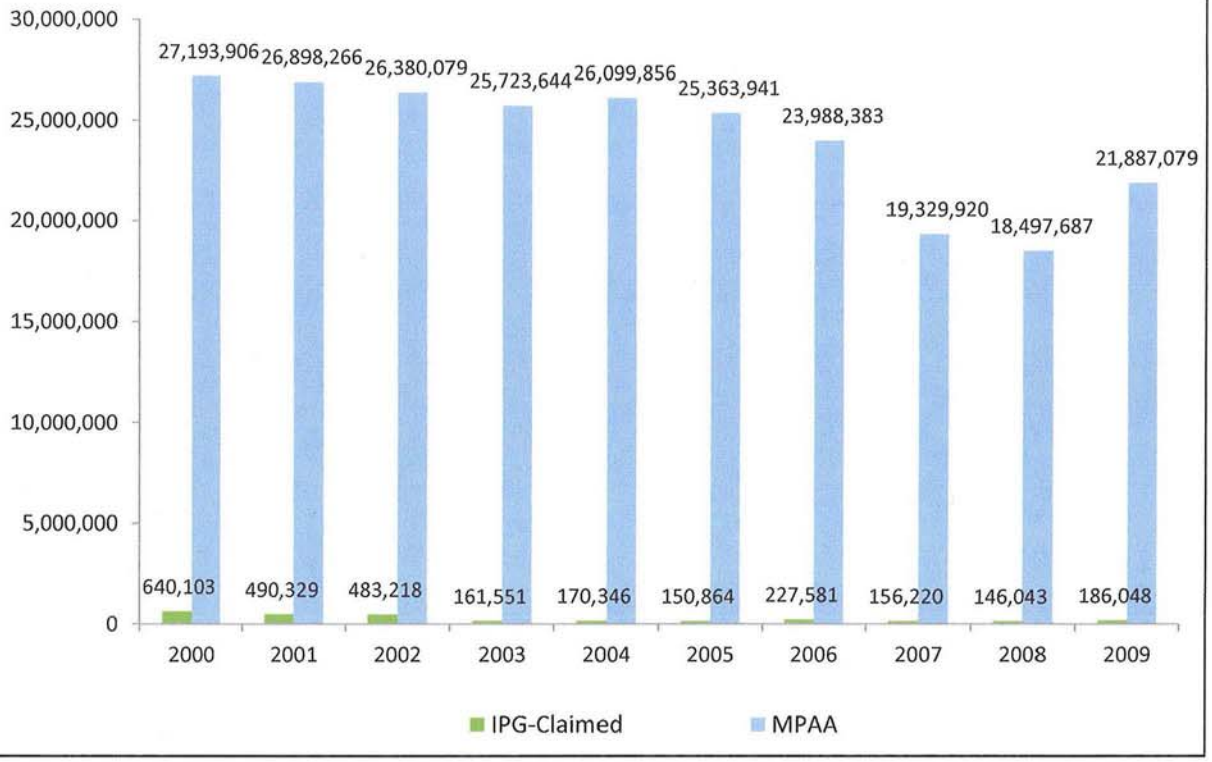


Chart 3 below demonstrates how MPAA's volume in minutes of retransmitted programming far exceeds IPG's over the 2000 to 2009 royalty years.

[30] These estimates are calculated by dividing the average number of retransmissions by the average number of unique compensable programs aired.

Chart 3: Total Volume of Compensable Retransmissions on Random Sample of Retransmitted Stations 2000 to 2006 and on All Retransmitted Stations 2007 to 2009



Programs varied in duration, from shows less than thirty-minutes to movies and specials several hours long. Chart 3 shows that MPAA compensable programs ranged between 18.5 and 27.2 million minutes of distantly retransmitted air time on the randomly sampled stations from 2000 to 2009. IPG-claimed retransmitted programs covered far less air time, between 146,043 and 640,103 minutes over the same time period. Thus, the total volume of MPAA-represented programming was approximately 85 times greater than the total volume of IPG-represented programming. Based on the

number of programs retransmitted, the average duration per retransmitted show was approximately 40 minutes for both MPAA and IPG-claimed programming.

Thus, my analysis of program volume on randomly sampled stations from 2000 to 2006 and all distantly retransmitted stations from 2007 to 2009 demonstrates that MPAA compensable programming constitutes the vast majority of retransmitted programming in the Program Suppliers category. Even before confirming the validity of IPG's claims, MPAA represented compensable programs accounted for 97.70%, 98.21%, 98.20%, 99.38%, 99.35%, 99.41%, 99.06, 99.20%, 99.22%, and 99.16% of total volume of Program Suppliers programming over the years 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, and 2009, respectively. However, as described earlier, the relative minutes, or volume, of programming retransmitted provides an imperfect metric of the relative value of the two sets of programs. The volume measure does not take into account what time of day the retransmission took place, the number of cable subscribers who had access to the distantly retransmitted broadcast, or the number of households who had access that watched the show. The share of viewing minutes provides a superior measure of relative value.

2. Program Viewing Statistics

While relative distant viewing provides a reasonable measure of a program's relative economic value in the context of this Phase II Proceeding, as described earlier, I

understand that direct measures of distant viewing data are not available for the years at issue in this proceeding. However, viewing information is available covering the years 2000 to 2003 in the Nielsen Diary data.

The Nielsen Diary data measures all viewing by satellite subscribers to the sample stations for 24 hours per day during the sweeps months for the years 2000 to 2003. In order to determine relative viewing minutes throughout each year from 2000 to 2009, I employed multiple regression analysis techniques, relying upon the lists of MPAA and IPG-claimed compensable programs. As described earlier in my testimony, I assume that each program title claimed by both MPAA-represented Program Suppliers and IPG is a valid MPAA-represented Program Suppliers program. I further assume that any program title claimed by IPG and not claimed by MPAA constitutes a valid IPG-represented program.[31]

The regressions rely upon information during sweeps months in 2000-2003 to calculate the mathematical relationship between viewing and (1) local or national ratings for the program or program's broadcast time, (2) the total number of subscribers of that station, (3) the year the program aired, (4) the time of day the program aired by quarter hour, (5) the type of program aired, and (6) the station affiliation the program aired on. The regressions demonstrate that there is a positive and statistically

[31] I understand that MPAA-represented Program Suppliers intends to challenge the validity of some of the IPG-represented titles. I will update my calculations following resolution of the claimant and title issues.

significant relationship between local ratings and viewing.[32] The higher the local ratings of a particular program or the higher the average national ratings for its broadcast time, all else equal, the higher is the level of viewing. The regressions also show that the total number of a station's distant subscribers, the year the program aired, the time of day the program aired, the type of program aired, and the station affiliation the program aired on each significantly affect distant viewing.

Based on the mathematical relationship between viewing during sweeps months and national, or local, ratings as well as the other factors described above, I calculated viewership for programs retransmitted by stations in the sample for each quarter hour, for each entire calendar year, from 2000 to 2009. Because local ratings data are only available for stations broadcasting in Nielsen metered markets, I performed three sets of multiple regression analyses:

Model One: I estimated the relationship between quarter-hour viewing and the average U.S. national television ratings during the quarter hour the program aired, the type of program, and the year of the broadcast (to adjust for annual trends in viewing). While this model takes into account important time of day factors influencing viewing

[32] Appendix Tables D-2a, D-2b, D-3a, and D-2b provide results from the regressions. The economic model better predicts distant viewing with separate regressions for WGN and non-WGN stations. The results show that for retransmissions of programs on stations other than WGN, holding other factors constant a one percent increase in a program's local ratings is associated with a 0.491%-0.547% increase in its distant viewership; for WGN holding other factors constant a one percent increase in local ratings is associated with a 0.408%-0.409% increase in distant viewership.

patterns, it does not take into account the relative popularity of specific programs airing at similar times of the day. Therefore, I estimated two additional econometric models.

Model Two *(only for stations in Nielsen metered markets)*: I calculated the relationship between distant viewing and the program's local ratings and the five additional factors described above.

Model Three: I estimated the same econometric model as Model Two, but for programs broadcasting outside Nielsen metered markets I replaced their unmeasured local ratings with the average local ratings of retransmitted programs of the same type broadcasting during the same time of day.[33]

Because the regression estimation of Model Two is limited to stations broadcasting in metered markets, the model generates viewing estimates only for programs retransmitted from stations in metered markets. These viewing estimates are made for each quarter hour of every day, each year from 2000 to 2009. In contrast, both Model One and Model Three generate viewing estimates for all programs retransmitted by the randomly sampled stations from all markets, for each quarter hour of every day, each year from 2000 to 2009.

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[33] The Tribune data assigns each program to a unique program type category such as "Game Show", "Movie", "Network Series", or "Talk Show". I define six time of day categories by the time intervals 5 AM – 9 AM, 9 AM – 4 PM, 4 PM – 8 PM, 8 PM – 11 PM, 11 PM – 2 AM, and 2 AM – 5 AM. Programs with missing local ratings receive the average local ratings of programs of the same program type broadcast at the same time of day. For example, a Network Series program broadcasting at 9 PM with no local ratings information is given the average local rating of all Network Series programs broadcasting between 8 PM and 11 PM.

Under each of these models MPAA's share of distant viewing is the sum of estimated household viewing of MPAA-represented programs divided by the total level of estimated household viewing of either IPG-claimed or MPAA-represented programs. Table 1 below reports MPAA's and IPG's relative distant viewing share on the randomly selected stations by cable royalty year for each of the three econometric approaches described above.

Table 1: Distant Viewing Shares of Program Supplier Programming Relying on 2000-2003 Nielsen Diary Data*

Year	*Program Supplier*	*Model 1: Calculations Based on U.S. Average Quarter Hour Ratings, all Sampled Stations Share of Viewing*	*Model 2: Calculations Based on Program's Local Ratings, Stations in Metered Markets Share of Viewing*	*Model 3: Calculations Based on Program's Local Ratings, all Sampled Stations Share of Viewing*
2000	MPAA	97.85	97.73	97.74
	IPG	2.15	2.27	2.26
2001	MPAA	98.02	97.94	97.92
	IPG	1.98	2.06	2.08
2002	MPAA	97.85	97.70	97.77
	IPG	2.15	2.30	2.23
2003	MPAA	99.63	99.59	99.59
	IPG	0.37	0.41	0.41
2004	MPAA	99.84	99.87	99.86
	IPG	0.16	0.13	0.14
2005	MPAA	99.69	99.69	99.70
	IPG	0.31	0.31	0.30
2006	MPAA	99.59	99.71	99.70
	IPG	0.41	0.29	0.30
2007	MPAA	99.69	99.88	99.72
	IPG	0.31	0.12	0.28
2008	MPAA	99.66	99.89	99.72
	IPG	0.34	0.11	0.28
2009	MPAA	99.40	99.79	99.53
	IPG	0.60	0.21	0.47

*As described in the text, MPAA may challenge the validity of many of IPG's claimed representations. MPAA's calculated shares would increase should some of IPG's claimed representations prove invalid.

In examining Table 1, one can observe the following: (1) in estimating Model One, which does not take into account each program's relative popularity as measured by its local ratings, MPAA's annual share of program viewing ranged from a low of 97.85% in 2000 to a high of 99.84% in 2004; (2) in estimating Model Two, which takes into account local ratings in estimating distant viewing levels, but only calculates distant viewing of retransmitted programs of stations broadcasting in Nielsen metered markets, MPAA's annual share of program viewing ranged from a low of 97.70% in 2002 to a high of 99.89% in 2008; and (3) in estimating Model 3, which takes into account program local ratings, and estimates distant viewing for all stations in the sample, MPAA's annual share of program viewing ranged from a low of 97.74% in 2000 to a high of 99.86% in 2004. For most of the satellite royalty years, in each of these models, MPAA's shares of viewing are higher than its shares of total programming volume, leading to my conclusion that MPAA-presented programs tend to be more-highly watched and more valuable relative to IPG-represented programs.

As described earlier in my testimony, viewership share may not equate exactly to relative market value if viewing of the same amount of MPAA and IPG compensable programming is associated with different levels of subscriber attraction and retention.

Unusual "niche" programming could be more valuable to CSOs if the same level of viewing was associated with greater subscriber growth. To examine whether this is the case, I perform a statistical analysis of the relationship between the number cable subscribers of distantly retransmitted stations and changes in the programming mix on those stations. Consumer choices regarding which satellite carrier or CSO to subscribe to, or whether to subscribe to any carrier, may depend on a host of factors including promotional pricing and availability. Nonetheless, the statistical analysis demonstrates that, holding distant viewers constant, an increase in the relative volume of IPG-claimed programming compared to MPAA programming is not associated with a statistically significant change in the number of subscribers in the following year.[34] I therefore make no adjustments to MPAA's relative program value as measured by its share of viewing.

V. Conclusion: Royalty Share Allocation

To determine MPAA and IPG cable royalty shares, I analyzed data concerning program volume, program viewing, and the number of subscribers of a randomly selected set of stations retransmitted by satellite carriers each year from 2000 to 2006 and all stations retransmitted from 2007 to 2009. My analysis indicated that relative program viewership provides a reasonable measure of the relative economic value of

[34] See Appendix Table D-4 for regression results.

distantly retransmitted programing. Model Three described in the preceding section is the preferred econometric model as it generates estimates of relative viewing for all programs retransmitted by all randomly sampled stations from 2000 to 2006 and all retransmitted stations from 2007 to 2009, for each quarter hour of every day of each satellite royalty year. Therefore, based upon information currently available, my analysis indicates that the value MPAA compensable programming accounted for 97.74%, 97.92%, 97.77%, 99.59%, 99.86%, 99.70%, 99.70%, 99.72%, 99.72%, and 99.53% of the total Program Supplier programming over the years 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, and 2009, respectively. MPAA therefore has an implied royalty share in those amounts for each year. I understand that MPAA disputes the validity of some programs currently claimed by IPG. If some of those IPG claims are ultimately deemed invalid, my calculated MPAA royalty share would increase.

APPENDIX A: CURRICULUM VITAE

Jeffrey S. Gray, Ph.D.
President
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912 F Street NW
Washington, DC 20004

Education & Background Summary

Ph.D., Economics, University of Pennsylvania
B.A., Economics (with honors) University of California Santa Cruz

Dr. Gray has over 20 years of experience in economic and statistical consulting, survey design, sampling methodologies, and complex database analytics. He is an authority on economic markets, statistical methods, and economic damages. His research has been published in some of the top peer-reviewed journals in the economics profession including *The American Economic Review* and the *Journal of Human Resources*. Dr. Gray has presented his findings before a variety of seminars at universities, meetings of professional societies and conferences on specialized topics in the United States and abroad. Dr. Gray has received recognition and financial support to pursue his research from the U.S. Department of Labor, the U.S. Department of Agriculture, and the Research Board of the University of Illinois. Throughout his career Dr. Gray has served as referee for professional journals assessing the appropriate application of economics and statistics.

Dr. Gray has conducted studies for corporations, government agencies and law firms on a variety of economic and statistical issues. Dr. Gray has served as a testifying expert on behalf of both plaintiffs and defendants addressing class certification, liability and/or damages issues. He has provided written or oral expert testimony in state, federal, and international courts and presented analytical findings before the Securities and Exchange Commission, the Texas Commissioner of Insurance, the Government of Singapore, and the New York and Massachusetts State Offices of Attorney General.

In addition to leading the economic and statistical consulting practices at Huron Consulting Group and Deloitte Financial Advisory Services LLP, Dr. Gray has served on the staff of the President's Council of Economic Advisers and on the faculty of the University of Illinois where he taught graduate and undergraduate courses covering consumer demand analysis, labor economics, and statistics. He earned a Ph.D. in economics from the University of Pennsylvania.

Professional Experience

- Analytics Research Group LLC, Washington, DC
  - President, Washington DC, 2013 – Present
- Deloitte Financial Advisory Services LLP, Washington, DC
  - Principal and Leader of Economics Practice, Washington DC, 2010 - 2013
- Huron Consulting Group, Boston, MA
  - Managing Director & National Leader, Economics, 2006 – 2009
- Deloitte Financial Advisory Services LLP/Deloitte & Touche LLP: FAS, Boston, MA
  - Principal-In-Charge, Boston, MA, 2004 – 2006
  - Economist & Principal, Economic Consulting, 2002 – 2006
- Arthur Andersen LLP, Boston, MA & Chicago, IL
  - Director, Economic Consulting, 2001 – 2002
  - Economist, 1999 – 2002
- Welch Consulting, College Station, TX
  - Senior Economist, 1996 – 1999
- University of Illinois, Urbana, IL
  - Assistant Professor, 1993 – 1997
- President's Council of Economic Advisors, Washington, DC
  - Staff Economist, 1991 – 1992
- University of Pennsylvania, Philadelphia, PA
  - Research, Teaching Assistant and Instructor, 1989 – 1991

Professional Affiliations

- American Economic Association
- American Finance Association
- American Statistical Association

Referee Responsibilities

- American Economic Review, Demography, Economic Inquiry, International Economic Review, Eastern Economic Journal, Journal of Human Resources, Journal of Labor Economics, Review of Economics and Statistics, Social Science Quarterly, Sociological Forum.

Publications and Presentations (Prior 10 Years)

- Jeffrey S. Gray. *Class Action Litigation: Working with Economics and Statistics Experts*, invited presentation, Washington, DC, September 2013.

- Jeffrey S. Gray. *Patent Infringement Damages: Approaches and Trends*, Moderated Panel on Intellectual Property in the Life Sciences, May 2010.

- Jeffrey S. Gray. *Institutional Investors: Protecting Your Assets – Prudent Investing,* Moderated Panel on Fiduciary Litigation Issues, February 2009.

- Jeffrey S. Gray. *Subprime Fallout: Prudent Investing & Economic Damages.* Professional Liability Underwriting Society Conference, Boston, MA. October 2008.

- Jeffrey S. Gray with Carl Tannenbaum and Laurence Kotlikoff, *Was the Credit Crisis Foreseeable?* Moderated Panel, April 2008.

- Eugene Canjels, Jeffrey S. Gray and Michel J. Vanderhart. *Does Everyone Overstate the Number of Hours They Work? An Examination of Survey Response Bias Among Salaried and Hourly Workers*, White Paper, April 2005.

Expert Testimony & Affidavits (Prior 4 Years)

- *In the Matter of Distribution of the 2000, 2001, 2002, and 2003 Cable Royalty Funds,* before the Copyright Royalty Judges, Washington D.C., Doc No. 2008-2 CRB CD 2000-2003 (Phase II), expert affidavits and trial testimony (2013).

- *Michael Brown, Brian Singer et al v. Canadian Imperial Bank of Commerce,* proceeding under the Class Proceedings Act, 1992, Court File No. 08-CV-00365119CP, Ontario Superior Court of Justice, Canada; expert affidavit and oral cross-examination (2011).

- *Wayne B. Gould et al v. Western Coal Corporation, et al.,* proceeding under the Class Proceedings Act, 1992, Court File No. CV-09-391701-00CP, Ontario Superior Court of Justice, Canada; two expert affidavits (2011).

- *Michael R. Cook v. Windham Equity Company,* C.A. No. 07 CA 12152 WGY, U.S. District Court of Massachusetts; expert and supplemental reports and trial testimony (2009).

APPENDIX B: NIELSEN METERED MARKETS

Metered Market	Years in Metered Market Data
New York	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Los Angeles	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Chicago	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Philadelphia	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Dallas-Ft. Worth	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
San Francisco-Oak-San Jose	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Boston (Manchester)	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Atlanta	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Washington, DC (Hagrstwn)	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Houston	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Detroit	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Phoenix (Prescott)	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Seattle-Tacoma	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Tampa-St. Pete (Sarasota)	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Minneapolis-St. Paul	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Denver	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Miami-Ft. Lauderdale	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Cleveland-Akron (Canton)	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Orlando-Daytona Bch-Melbrn	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Sacramnto-Stkton-Modesto	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
St. Louis	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Portland, OR	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Pittsburgh	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Charlotte	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Indianapolis	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Raleigh-Durham (Fayetvlle)	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Baltimore	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
San Diego	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Nashville	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Hartford & New Haven	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Salt Lake City	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Kansas City	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Cincinnati	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Columbus, OH	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Milwaukee	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
San Antonio	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
West Palm Beach-Ft. Pierce	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Birmingham (Ann and Tusc)	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Las Vegas	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Norfolk-Portsmth-Newpt Nws	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009

Albuquerque-Santa Fe	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Oklahoma City	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Greensboro-H.Point-W.Salem	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Jacksonville	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Louisville	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Memphis	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Buffalo	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Providence-New Bedford	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
New Orleans	2000, 2001, 2002, 2003, 2004, 2005, 2007, 2008, 2009
Austin	2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Richmond-Petersburg	2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Ft. Myers-Naples	2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Dayton	2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Greenvll-Spart-Ashevll-And	2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Knoxville	2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Tulsa	2003, 2004, 2005, 2006, 2007, 2008, 2009

APPENDIX C: STATIONS SAMPLED FOR ANALYSIS

2000		2001		2002		2003	
Station	*Average Distant Subscribers*	*Station*	*Average Distant Subscribers*	*Station*	*Average Distant Subscribers*	*Station*	*Average Distant Subscribers*
WGN	9,983,333	WGN	12,033,333	WGN	13,900,000	WGN	15,425,000
WNBC	1,999,234	WNYW	2,277,469	WNYW	2,195,833	WNYW	1,957,830
WNYW	1,983,852	WNBC	2,125,746	WNBC	1,945,437	WABC	1,699,864
WABC	1,869,575	WABC	2,061,607	WABC	1,926,029	WNBC	1,683,084
WCBS	1,767,157	WCBS	1,962,895	WCBS	1,831,223	KTTV	1,629,881
KTTV	1,653,862	KTTV	1,801,082	KTTV	1,788,636	WCBS	1,603,820
KABC	1,638,535	KABC	1,557,440	KABC	1,485,073	KABC	1,336,369
KNBC	1,436,483	KNBC	1,554,040	KNBC	1,450,005	KNBC	1,284,712
KCBS	1,382,769	KCBS	1,496,655	KCBS	1,419,650	KCBS	1,263,718
KTLA	1,105,211	KTLA	1,049,691	WPIX	956,504	WPIX	788,926
WPIX	955,780	WPIX	954,762	KTLA	897,711	KTLA	734,547
KWGN	810,717	KWGN	835,880	KWGN	770,845	KWGN	647,051
WWOR	710,912	WSBK	730,330	WSBK	674,365	WSBK	574,259
WSBK	627,529	WWOR	693,078	WWOR	654,838	WWOR	568,869
KMGH	208,052	KDVR	148,655	KDVR	125,879	KDVR	112,174
WTXF	206,090	KMGH	147,986	KUSA	121,620	KUSA	105,240
KCNC	206,082	KCNC	147,972	KCNC	120,583	KMGH	103,958
KDVR	204,707	KUSA	146,830	KMGH	120,402	KCNC	103,615
KUSA	203,764	WSEE	111,147	WKRN	80,364	WAGA	79,069
KTVU	201,340	WKRN	109,546	WSEE	75,714	WSB	61,988
WSB	198,714	WAGA	40,397	WAGA	67,370	WFLD	59,733
WUSA	188,514	KTVT	30,383	KDFW	57,788	WXIA	58,948
WHDH	187,396	WMAQ	19,226	WGCL	56,622	WGCL	58,840
KOIN	180,541	WBBM	15,246	WSB	54,792	KDFW	58,309
KCRA	180,245	WZTV	9,191	WXIA	54,696	WKRN	54,890
WKRN	165,494	WSMV	9,191	WFAA	47,313	WSEE	52,646
WSEE	162,649	KCPQ	7,145	KTVT	47,284	WLS	51,446
WSVN	48,623	KMBC	6,607	KXAS	43,693	WFAA	46,577
WAGA	12,573	KSDK	6,133	WFLD	42,900	KTVT	45,862
KTVT	10,337	KMOV	6,133	WMAQ	28,462	KXAS	42,368
KXAS	9,822	KDNL	6,133	WZTV	7,434	WFDC	42,110
WSMV	5,533	WSVN	5,839	WTVF	7,434	WDAF	4,087
WZTV	5,533	KGO	5,511	WPXI	6,845	KIRO	3,191
WTVF	5,062	KTVU	5,511	WDAF	5,106	KING	3,191
WTAE	4,513	WRC	4,306	KOMO	5,087	KSTP	2,801
KRON	4,352	WUSA	4,306	KRON	4,182	KGW	1,978
KOMO	4,109	WFXT	3,680	WJLA	3,620	WHDH	1,743

KCPQ	4,040	WBZ	3,680	WCCO	3,119	WCVB	1,743
WBBM	3,913	WFTC	3,116	WCVB	2,526	KTXL	1,357
WMAQ	3,881	WJW	2,875	WKYC	2,321	WCAU	1,349
KMOV	2,908	WKYC	2,875	WEWS	2,321	KPNX	661
WJLA	2,695	WEWS	2,875	KHOU	2,137	KSAZ	661
WRC	2,695	KXTV	2,675	KPDX	2,069	KPHO	661
WCVB	2,284	KTXL	2,675	KATU	2,069	KNXV	661
WFXT	2,284	KPRC	2,670	KYW	1,911	WTHR	517
KSTP	1,617	KTRK	2,670	WKRC	1,713	WCCB	462
WCCO	1,617	KSTU	2,629	WLWT	1,713	KEYE	458
WOIO	1,594	KUTV	2,629	WXIX	1,713	WFXR	415
WEWS	1,594	KTVX	2,629	KUTV	1,647	WESH	399
KSAZ	1,330	KATU	2,537	KTVX	1,647	WLOS	262
KNXV	1,330	KOIN	2,537	KPHO	1,074	WPLG	236
KATU	1,167	KYW	2,352	KSAZ	1,074	WJSU	232
KGW	1,167	WPVI	2,352	WESH	1,031	KGUN	188
KPDX	1,167	WXIX	2,129	WTHR	658	KARK	165
KXTV	1,149	WLWT	2,129	WISH	658	WPSD	160
KOVR	1,149	KPNX	1,750	WFTS	471	KCCI	129
KTXL	1,149	WCCB	1,646	WPLG	469	KDSM	129
WPVI	1,109	WOFL	1,392	KENS	466	WOTV	117
KYW	1,109	WDIV	1,292	KMOL	466	KOTV	107
WSOC	893	WJBK	1,292	WLOS	288	WLEX	99
WCCB	893	WXYZ	1,292	WHNS	288	KWTX	72
WCNC	893	WWJ	1,292	KGTV	204	WPTZ	66
WWJ	884	KRON	960	XETV	204	WHTM	55
WDIV	884	WXIN	929	KNSD	204	KRDO	36
WJBK	874	WISH	929	WVTM	148	WOWT	29
WKMG	858	WRTV	929	WJSU	148	KMTV	29
WTVJ	706	WNCN	862	WBRC	148	WCTV	28
WFTS	455	WRAZ	861	WZZM	22	KTNV	19
WRTV	424	WTVD	861	WWMT	22	KTVA	8
WISH	424	WFTS	778	WCAX	9	KIMO	8
WTHR	424	WTSP	778	WFLX	8	WMC	6
WXIN	354	WTVJ	655	KRXI	5	WFTX	5
WCPO	299	WFOR	654	KRNV	5	KDEB	4
WXIX	299	WPLG	654	WGAL	4	WLTX	2
WLWT	299	WSPA	550	WHTM	4	WTVR	1
WTVD	274	KASA	312	KSEE	2	WWBT	1
WRAZ	274	KOB	312	KHNL	1	WSAZ	0.3
KENS	185	KOAT	312	WHAS	1	WXXA	0.2
KASA	17	XETV	267	KTNV	1	KTVB	0.1
KRQE	17	WBRC	58	KVVU	1	KMMF	0.1

2004		2005		2006		2007	
Station	*Average Distant Subscribers*	*Station*	*Average Distant Subscribers*	*Station*	*Average Distant Subscribers*	*Station*	*Average Distant Subscribers*
WGN	17,416,667	WGN	19,775,000	WGN	20,391,667	WGN	21,225,000
WNYW	1,707,902	WNYW	1,486,405	WNYW	1,251,163	WPIX	1,572,083
WABC	1,469,176	WABC	1,244,542	WABC	982,134	WNYW	907,534
WNBC	1,456,993	WNBC	1,208,213	WNBC	967,632	WCBS	707,967
WCBS	1,426,770	WCBS	1,187,968	WCBS	965,459	WNBC	707,621
KTTV	1,403,828	KTTV	1,147,325	KTTV	951,667	WABC	701,836
KABC	1,125,579	KABC	900,720	KABC	788,499	KTTV	692,702
KCBS	1,083,320	KCBS	865,661	KCBS	764,406	KABC	612,427
KNBC	1,082,934	KNBC	858,248	KNBC	744,012	KCBS	607,157
WPIX	694,827	WBZL	638,593	WPIX	699,798	KNBC	585,829
KTLA	587,858	WPIX	588,783	KWGN	463,177	KTLA	556,469
KWGN	565,258	KWGN	494,813	KTLA	432,840	WNUV	383,817
WWOR	496,152	KTLA	489,521	WWOR	402,073	WWOR	326,081
WSBK	487,076	WWOR	461,136	WSBK	384,468	KWGN	325,520
KTNC	159,890	WSBK	441,398	WJAN	302,343	WSBK	317,184
WJAN	124,114	KTNC	209,597	WSFL	262,606	WJAN	304,790
WFDC	109,003	W21AU	206,887	WNUV	251,093	W21AU	198,466
WAMI	103,266	WJAN	142,432	WBZL	234,842	WSFL	152,814
KDVR	88,942	KSWB	137,897	KTNC	222,131	WAMI	134,399
WXFT	88,133	WDLI	136,463	W21AU	211,739	KBWB	118,691
KUSA	83,229	WFDC	131,122	KSWB	197,090	KTNC	115,331
KCNC	82,416	WAMI	125,143	WAMI	132,805	KGO	98,016
KMGH	79,993	WXFT	88,155	WXFT	83,382	WXFT	80,221
W21AU	79,296	KFTR	64,933	KFTR	72,490	KFTR	77,693
WAGA	69,931	KDVR	64,412	WAGA	47,451	WFUT	74,052
WFLD	64,578	WAGA	59,965	WFLD	44,941	WSB	71,448
KFTR	57,840	KUSA	55,410	KDVR	42,148	WAGA	71,052
WSB	53,602	WFLD	55,098	WLBT	41,874	KTVU	71,052
WGCL	51,942	KCNC	53,812	WLS	40,952	KSWB	60,719
WLS	51,342	KMGH	52,317	WCTV	2,655	KPIX	54,092
WXIA	50,910	KBEJ	47,868	KPTV	2,633	WGCL	54,092
WBBM	46,916	WLS	46,703	KASA	2,152	WXIA	50,658
WSEE	32,600	WSB	44,581	WRC	1,654	WLBT	49,312
WDAF	3,069	WGCL	43,725	KTXL	1,157	KNTV	48,872
KSTP	2,273	KMBC	3,526	WFXT	756	KTFF	33,156
WRC	2,074	KRON	3,316	KFVS	724	KMAX	30,056
WUSA	2,074	KTVU	3,316	WJW	685	KREN	25,858
KSTU	1,351	KRQE	2,038	WWJ	448	WIS	25,257
WRTV	688	WJLA	1,969	WREG	300	WTIC	23,212

KFOR	568	KXTV	1,441	WLWT	288	WPCW	19,253
KNVN	405	WBZ	978	WHNS	280	KODF	16,262
WVTM	325	WEWS	917	WNEG	280	K47DF	15,909
KOLD	325	KTHV	784	WZVN	265	KMSG	15,781
WKMG	322	WTHR	753	KTBS	220	WMUR	10,718
XETV	284	WOAI	603	WICS	155	WFFF	7,868
KYTV	231	KUTV	549	KMTV	101	WVNY	7,868
KCEN	169	WESH	374	WFSB	85	WCAX	7,868
KSPR	165	WLWT	352	WFXS	74	WNNE	7,868
KKTV	160	WTVT	346	WAOW	74	KDVR	5,812
WGRZ	132	WSVN	340	WVAH	66	KCNC	5,223
WPMT	132	KTUL	339	WGRZ	64	KMGH	5,122
KPBI	92	KEYE	335	KHBS	62	KMSP	5,116
WVAH	70	WNCT	310	KPBI	62	KSTP	5,116
KVBC	68	KWTV	282	WLAJ	62	KARE	5,116
WJRT	65	WTEV	275	KQDS	57	KUSA	5,113
WSMH	65	WJXX	275	WCYB	48	KTVD	4,841
KSFY	56	WBBH	271	KFDX	45	WSYX	4,440
WBRE	53	WOTV	258	WSAV	44	WTTE	4,440
WPBN	49	WHAS	252	WTVR	40	WBNS	4,440
WKOW	45	WHTM	174	WWBT	40	WAPT	4,047
KAUZ	42	KRNV	132	KTVB	39	WJTV	4,047
WSYT	40	KCBA	125	KTRV	39	WSEE	2,715
KWQC	37	WOI	119	WROC	38	KSAT	1,263
WRLH	29	WPEC	112	KSNT	38	KABB	1,249
KGET	28	WWTV	69	KMIZ	37	KTBY	943
WGXA	27	KFSM	66	KVLY	34	KIMO	410
WDTN	26	WFXS	63	WMTW	33		
KHON	24	WJFW	63	WRCB	32		
KITV	24	KGBT	50	WTAT	31		
WVIT	21	WSYT	45	WJHG	29		
WAGT	20	WMAZ	37	KPVI	28		
KKCO	17	KHQA	34	WMBD	27		
WISN	14	WYZZ	23	WHOI	27		
WBAL	14	KOAM	21	WEVV	27		
WUPW	13	KRCG	16	KDUH	19		
WLNE	5	WLNE	10	WKBN	16		
WNAC	5	KMVT	8	KHNL	15		
WPGX	4	KIDY	7	KBGF	12		
WMBB	4	WHSV	5	KZTV	3		
WMDN	0.1	KATN	1	KLFY	2		

2008			2009	
Station	*Average Distant Subscribers*		*Station*	*Average Distant Subscribers*
WGN	21,350,000		WGN	21,575,000
WPIX	1,595,566		WPIX	1,729,147
WNYW	812,437		WNYW	649,212
WCBS	647,609		WCBS	541,938
WABC	646,154		WABC	540,051
WNBC	644,186		WNBC	539,659
KTTV	629,696		KTTV	525,033
KABC	554,061		KTLA	505,915
KCBS	544,496		KABC	462,444
KNBC	532,037		KCBS	455,112
KTLA	527,225		KNBC	450,709
WNUV	498,111		WNUV	286,835
WJAN	305,082		KOFY	271,626
KWGN	288,248		WWOR	259,128
WWOR	285,554		WJAN	244,613
WSBK	278,704		KWGN	239,544
KBWB	247,701		WSBK	230,152
W21AU	182,906		WDCW	213,641
WSFL	158,083		KTFF	192,666
KTFF	136,556		W21AU	171,506
WAMI	134,604		WSFL	169,643
KGO	113,832		WAMI	130,690
KFTR	83,526		KGO	115,709
WSB	82,821		KFTR	94,628
WXFT	80,923		WTHR	91,796
WAGA	75,486		WRTV	89,081
KTVU	75,486		WXFT	84,204
KSWB	61,810		WSB	80,021
KPIX	56,919		KTVU	67,186
WGCL	56,919		WAGA	67,186
WXIA	54,088		KSWB	59,205
WLBT	53,024		WLBT	57,655
KNTV	52,269		WGCL	54,640
KODF	36,939		KPIX	53,373
KMAX	36,271		WXIA	50,244
KREN	30,424		KNTV	48,722
WIS	29,661		KSKN	43,775
WPCW	27,179		KODF	42,166
WTIC	26,114		KMAX	41,116

WMUR	12,474		WPCW	34,519
KSTP	9,358		WTIC	29,583
KMSP	9,358		KRCW	25,204
KARE	9,335		KXVO	21,940
WVNY	8,127		KRNS	18,061
WFFF	8,127		KREN	17,483
WNNE	8,127		WMUR	13,774
WCAX	8,127		WIS	10,792
WTTE	5,211		KMSP	8,991
WSYX	5,211		KARE	8,991
WBNS	5,211		KSTP	8,991
KDVR	4,667		WFFF	8,280
KABB	4,363		WNNE	8,280
KSAT	4,363		WVNY	8,280
KCNC	4,237		WCAX	8,280
WJTV	4,210		KSAT	7,212
WAPT	4,210		WTTE	5,779
KMGH	4,182		WSYX	5,779
KUSA	4,170		WBNS	5,779
KTVD	3,950		WJTV	4,477
WSEE	2,013		WAPT	4,477
KTBY	1,686		KDVR	3,790
KIMO	1,669		KCNC	3,528
			KMGH	3,489
			KUSA	3,468
			KTVD	3,305
			KBTZ	3,123
			KTBY	2,411
			WTTV	2,291
			WXIN	2,291
			WTVJ	136
			WPLG	136
			WSEE	136

APPENDIX D: REGRESSION MODELS - SPECIFICATIONS & RESULTS

Table D-1a: Poisson Regression Results, Model 1 excluding WGN					
Distant Viewers	Coefficient Estimate	Robust Standard Error	Z-score	95% Confidence Interval	
Log of US Quarter Hour Ratings	1.329	0.002	746.67	1.326	1.333
Log of Market Size	0.195	0.000	741.61	0.194	0.195
Year					
2001	-0.119	0.002	-66.39	-0.122	-0.115
2002	-0.770	0.002	-398.77	-0.774	-0.766
2003	-0.978	0.002	-465.21	-0.982	-0.974
2004	-1.325	0.004	-301.37	-1.334	-1.317
Program Type					
CARTOON	-1.957	0.070	-27.81	-2.095	-1.819
CHILDREN'S SHOW	-1.686	0.072	-23.52	-1.826	-1.545
CHILDREN'S SPECIAL	-1.434	0.082	-17.53	-1.595	-1.274
DAYTIME SOAP	-0.830	0.070	-11.84	-0.968	-0.693
FINANCE	-1.635	0.076	-21.62	-1.783	-1.486
FIRST-RUN SYNDICATION	-1.265	0.070	-18.03	-1.402	-1.127
GAME SHOW	-1.006	0.070	-14.35	-1.144	-0.869
HEALTH	-1.350	0.078	-17.34	-1.502	-1.197
HOBBIES & CRAFTS	-1.283	0.071	-18.09	-1.422	-1.144
INSTRUCTIONAL	-1.033	0.077	-13.43	-1.183	-0.882
MINI-SERIES	-1.373	0.072	-18.98	-1.515	-1.232
MOVIE	-1.673	0.070	-23.83	-1.811	-1.535
MUSIC	-1.677	0.073	-23.03	-1.820	-1.535
MUSIC SPECIAL	-1.173	0.071	-16.54	-1.312	-1.034
NETWORK SERIES	-1.256	0.070	-17.91	-1.393	-1.118
NEWS	-1.295	0.070	-18.47	-1.432	-1.157
OTHER	-1.230	0.070	-17.50	-1.368	-1.092
PLAYOFF SPORTS	-0.861	0.071	-12.20	-0.999	-0.723
PSEUDO-SPORTS	-0.436	0.073	-5.98	-0.579	-0.293
PUBLIC AFFAIRS	-1.391	0.071	-19.67	-1.529	-1.252
RELIGIOUS	-1.924	0.072	-26.68	-2.066	-1.783
SPECIAL	-1.292	0.070	-18.39	-1.430	-1.154
SPORTING EVENT	-0.600	0.070	-8.55	-0.737	-0.462
SPORTS-RELATED	-1.077	0.070	-15.30	-1.215	-0.939
SYNDICATED	-1.312	0.070	-18.72	-1.450	-1.175
TALK SHOW	-0.860	0.070	-12.27	-0.998	-0.723
TEAM VS. TEAM	-0.843	0.070	-12.01	-0.981	-0.706

TV MOVIE	-1.048	0.070	-14.91	-1.186	-0.910
Affiliation					
NETWORK	1.103	0.007	158.27	1.089	1.116
CW	0.816	0.007	111.78	0.802	0.830
INDEPENDENT	-1.910	0.016	-121.74	-1.941	-1.879
Constant	6.587	0.071	93.29	6.449	6.725

Table D-1b: Poisson Regression Results, Model 1 WGN only					
Distant Viewers	**Coefficient Estimate**	**Robust Standard Error**	**Z-score**	**95% Confidence Interval**	
Log of US Quarter Hour Ratings	0.753	0.005	145.28	0.743	0.763
Year					
2001	-0.131	0.008	-16.27	-0.146	-0.115
2002	-0.739	0.009	-84.07	-0.756	-0.722
2003	-1.224	0.009	-129.40	-1.243	-1.206
2004	-1.657	0.018	-91.47	-1.693	-1.622
Program Type					
CHILDREN'S SHOW	-0.208	0.079	-2.64	-0.362	-0.053
CHILDREN'S SPECIAL	0.089	0.161	0.55	-0.228	0.405
FINANCE	-1.358	0.133	-10.24	-1.619	-1.098
FIRST-RUN SYNDICATION	0.265	0.074	3.59	0.120	0.410
GAME SHOW	-0.683	0.076	-8.99	-0.833	-0.534
HEALTH	-25.383	0.114	-221.74	-25.607	-25.159
MOVIE	0.628	0.069	9.07	0.492	0.763
MUSIC	-0.344	0.084	-4.08	-0.509	-0.179
MUSIC SPECIAL	-27.163	0.146	-185.45	-27.450	-26.876
NETWORK SERIES	-0.969	0.073	-13.28	-1.112	-0.826
NEWS	-0.979	0.070	-14.02	-1.116	-0.842
OTHER	-0.492	0.071	-6.96	-0.630	-0.353
PUBLIC AFFAIRS	-1.302	0.101	-12.84	-1.501	-1.104
RELIGIOUS	0.608	0.080	7.61	0.452	0.765
SPECIAL	-0.176	0.090	-1.95	-0.353	0.001
SPORTS-RELATED	0.473	0.076	6.23	0.324	0.622
SYNDICATED	0.346	0.069	5.04	0.212	0.481
TALK SHOW	-0.609	0.069	-8.80	-0.745	-0.474
TEAM VS. TEAM	1.519	0.069	21.96	1.383	1.654
TV MOVIE	-26.499	0.076	-349.76	-26.648	-26.351
Constant	8.557	0.070	121.96	8.420	8.695

Table D-2a: Poisson Regression Results, Model 2 excluding WGN					
Distant Viewers	Coefficient Estimate	Robust Standard Error	Z-score	95% Confidence Interval	
Log of Market Size	0.596	0.001	421.64	0.593	0.598
Log of Local Ratings	0.207	0.000	721.15	0.207	0.208
Time of Day (Quarter Hour)					
2	0.029	0.009	3.23	0.011	0.047
3	-0.029	0.009	-3.11	-0.048	-0.011
4	-0.043	0.010	-4.36	-0.062	-0.023
5	-0.244	0.010	-23.37	-0.264	-0.223
6	-0.221	0.011	-20.75	-0.242	-0.200
7	-0.281	0.011	-24.89	-0.303	-0.259
8	-0.290	0.012	-24.38	-0.314	-0.267
9	-0.793	0.015	-54.00	-0.822	-0.765
10	-0.824	0.015	-54.83	-0.854	-0.795
11	-0.920	0.016	-57.55	-0.951	-0.888
12	-1.046	0.017	-61.12	-1.080	-1.013
13	-1.453	0.022	-66.52	-1.496	-1.410
14	-1.472	0.022	-65.69	-1.516	-1.428
15	-1.799	0.024	-74.33	-1.847	-1.752
16	-1.910	0.025	-75.09	-1.960	-1.860
17	-2.091	0.029	-72.90	-2.147	-2.034
18	-2.151	0.029	-72.93	-2.209	-2.094
19	-2.324	0.031	-76.11	-2.384	-2.264
20	-2.387	0.030	-80.51	-2.445	-2.329
21	-1.997	0.025	-81.20	-2.045	-1.949
22	-2.061	0.024	-85.46	-2.109	-2.014
23	-2.003	0.023	-88.77	-2.047	-1.959
24	-2.054	0.022	-92.74	-2.098	-2.011
25	-1.373	0.015	-90.13	-1.402	-1.343
26	-1.397	0.015	-91.92	-1.427	-1.367
27	-1.279	0.014	-89.26	-1.307	-1.251
28	-1.293	0.015	-89.12	-1.322	-1.265
29	-1.067	0.012	-89.84	-1.091	-1.044
30	-1.055	0.012	-89.22	-1.078	-1.032
31	-0.941	0.011	-82.45	-0.964	-0.919
32	-0.945	0.011	-84.04	-0.967	-0.923
33	-0.717	0.010	-71.16	-0.737	-0.697
34	-0.697	0.010	-69.19	-0.716	-0.677

35	-0.645	0.010	-65.04	-0.665	-0.626
36	-0.654	0.010	-65.38	-0.673	-0.634
37	-0.542	0.010	-56.38	-0.561	-0.523
38	-0.532	0.010	-54.85	-0.551	-0.513
39	-0.458	0.010	-47.49	-0.477	-0.439
40	-0.467	0.010	-48.28	-0.486	-0.448
41	-0.389	0.009	-41.06	-0.407	-0.370
42	-0.388	0.010	-40.71	-0.407	-0.369
43	-0.356	0.010	-37.49	-0.375	-0.338
44	-0.378	0.010	-39.34	-0.397	-0.359
45	-0.401	0.010	-42.00	-0.420	-0.383
46	-0.400	0.010	-41.55	-0.418	-0.381
47	-0.457	0.010	-46.69	-0.476	-0.438
48	-0.492	0.010	-49.96	-0.512	-0.473
49	-0.501	0.010	-49.27	-0.521	-0.481
50	-0.517	0.010	-50.37	-0.537	-0.497
51	-0.566	0.010	-54.92	-0.586	-0.546
52	-0.586	0.010	-56.43	-0.606	-0.565
53	-0.486	0.010	-49.60	-0.505	-0.467
54	-0.487	0.010	-49.68	-0.507	-0.468
55	-0.473	0.010	-48.34	-0.493	-0.454
56	-0.483	0.010	-49.15	-0.502	-0.464
57	-0.426	0.010	-43.32	-0.445	-0.407
58	-0.422	0.010	-42.78	-0.441	-0.402
59	-0.413	0.010	-41.73	-0.433	-0.394
60	-0.446	0.010	-44.89	-0.465	-0.426
61	-0.262	0.010	-27.56	-0.281	-0.244
62	-0.282	0.010	-29.53	-0.300	-0.263
63	-0.288	0.009	-30.37	-0.307	-0.269
64	-0.310	0.009	-32.75	-0.329	-0.292
65	-0.279	0.009	-30.73	-0.296	-0.261
66	-0.308	0.009	-33.84	-0.326	-0.290
67	-0.328	0.009	-36.17	-0.346	-0.310
68	-0.360	0.009	-39.68	-0.378	-0.342
69	-0.320	0.009	-34.93	-0.338	-0.302
70	-0.333	0.009	-36.30	-0.351	-0.315
71	-0.311	0.009	-34.20	-0.329	-0.293
72	-0.329	0.009	-36.15	-0.347	-0.311
73	-0.208	0.009	-23.49	-0.226	-0.191
74	-0.208	0.009	-23.42	-0.225	-0.190
75	-0.100	0.009	-11.53	-0.116	-0.083
76	-0.117	0.009	-13.46	-0.134	-0.100
77	-0.065	0.009	-7.58	-0.081	-0.048
78	-0.079	0.009	-9.25	-0.096	-0.062

79	-0.001	0.008	-0.13	-0.018	0.015
80	-0.035	0.008	-4.16	-0.052	-0.019
81	0.216	0.008	25.99	0.200	0.232
82	0.208	0.008	24.92	0.192	0.224
83	0.231	0.008	27.79	0.215	0.248
84	0.204	0.008	24.45	0.188	0.221
85	0.300	0.008	36.65	0.284	0.316
86	0.306	0.008	37.26	0.290	0.322
87	0.307	0.008	37.28	0.291	0.323
88	0.298	0.008	36.02	0.281	0.314
89	0.292	0.008	35.99	0.276	0.308
90	0.331	0.008	40.72	0.315	0.347
91	0.370	0.008	45.70	0.354	0.386
92	0.404	0.008	49.87	0.388	0.420
93	0.194	0.008	23.47	0.178	0.210
94	0.250	0.008	30.05	0.233	0.266
95	0.255	0.008	30.71	0.239	0.271
96	0.274	0.008	32.63	0.258	0.291
Year					
2001	-0.110	0.002	-59.16	-0.113	-0.106
2002	-0.646	0.002	-322.00	-0.650	-0.642
2003	-0.865	0.002	-389.44	-0.869	-0.861
2004	-1.253	0.005	-261.89	-1.263	-1.244
Program Type					
CARTOON	-1.974	0.069	-28.63	-2.110	-1.839
CHILDREN'S SHOW	-1.700	0.070	-24.17	-1.838	-1.562
CHILDREN'S SPECIAL	-1.439	0.081	-17.70	-1.598	-1.280
DAYTIME SOAP	-1.050	0.069	-15.28	-1.185	-0.916
FINANCE	-1.557	0.076	-20.52	-1.706	-1.408
FIRST-RUN SYNDICATION	-1.240	0.069	-18.04	-1.374	-1.105
GAME SHOW	-1.421	0.069	-20.67	-1.556	-1.286
HEALTH	-1.521	0.077	-19.86	-1.671	-1.371
HOBBIES & CRAFTS	-1.230	0.070	-17.68	-1.366	-1.093
INSTRUCTIONAL	-0.969	0.076	-12.82	-1.117	-0.820
MINI-SERIES	-1.475	0.071	-20.75	-1.614	-1.336
MOVIE	-1.862	0.069	-27.07	-1.997	-1.728
MUSIC	-2.019	0.072	-28.21	-2.160	-1.879
MUSIC SPECIAL	-1.677	0.070	-24.00	-1.814	-1.540
NETWORK SERIES	-1.506	0.069	-21.92	-1.641	-1.371
NEWS	-1.308	0.069	-19.05	-1.442	-1.173
OTHER	-1.106	0.069	-16.06	-1.241	-0.971
PLAYOFF SPORTS	-1.367	0.069	-19.76	-1.502	-1.231

PSEUDO-SPORTS	-0.837	0.072	-11.68	-0.977	-0.696
PUBLIC AFFAIRS	-1.479	0.069	-21.35	-1.615	-1.344
RELIGIOUS	-1.560	0.071	-22.01	-1.699	-1.421
SPECIAL	-1.485	0.069	-21.57	-1.620	-1.350
SPORTING EVENT	-0.880	0.069	-12.80	-1.015	-0.745
SPORTS-RELATED	-1.159	0.069	-16.80	-1.294	-1.023
SYNDICATED	-1.500	0.069	-21.84	-1.634	-1.365
TALK SHOW	-0.993	0.069	-14.47	-1.128	-0.859
TEAM VS. TEAM	-1.265	0.069	-18.39	-1.400	-1.130
TV MOVIE	-1.434	0.069	-20.80	-1.569	-1.299
Affiliation					
NETWORK	0.757	0.007	107.93	0.744	0.771
CW	0.750	0.007	102.12	0.736	0.764
INDEPENDENT	-1.532	0.016	-96.31	-1.563	-1.500
Constant	3.901	0.069	56.35	3.766	4.037

Table D-2b: Poisson Regression Results, Model 2 WGN only					
Distant Viewers	Coefficient Estimate	Robust Standard Error	Z-score	95% Confidence Interval	
Log of Local Ratings	0.408	0.008	50.37	0.392	0.424
Time of Day (Quarter Hour)					
2	-0.002	0.063	-0.03	-0.125	0.121
3	-0.168	0.069	-2.44	-0.304	-0.033
4	-0.164	0.070	-2.35	-0.301	-0.028
5	0.148	0.059	2.51	0.032	0.264
6	-0.013	0.062	-0.20	-0.135	0.110
7	0.153	0.058	2.65	0.040	0.266
8	0.015	0.060	0.26	-0.102	0.133
9	-0.535	0.066	-8.07	-0.665	-0.405
10	-0.609	0.068	-8.90	-0.743	-0.475
11	-0.418	0.068	-6.11	-0.552	-0.284
12	-0.377	0.069	-5.43	-0.513	-0.241
13	-0.570	0.073	-7.80	-0.714	-0.427
14	-0.590	0.074	-8.01	-0.734	-0.446
15	-1.183	0.100	-11.81	-1.379	-0.987
16	-1.188	0.100	-11.86	-1.384	-0.992
17	-1.088	0.074	-14.77	-1.233	-0.944
18	-1.317	0.081	-16.30	-1.475	-1.159
19	-1.232	0.077	-16.06	-1.383	-1.082
20	-1.211	0.076	-15.87	-1.360	-1.061
21	0.624	0.055	11.39	0.516	0.731
22	0.592	0.055	10.85	0.485	0.698
23	0.760	0.054	14.16	0.655	0.865
24	0.720	0.054	13.41	0.615	0.825
25	-1.950	0.129	-15.17	-2.201	-1.698
26	-1.972	0.129	-15.33	-2.224	-1.720
27	-1.836	0.125	-14.64	-2.082	-1.590
28	-1.865	0.125	-14.87	-2.111	-1.620
29	-0.837	0.087	-9.66	-1.007	-0.667
30	-0.745	0.086	-8.65	-0.913	-0.576
31	-0.516	0.078	-6.64	-0.669	-0.364
32	-0.567	0.079	-7.17	-0.722	-0.412
33	0.141	0.071	1.99	0.002	0.280
34	0.207	0.070	2.96	0.070	0.344
35	0.001	0.080	0.02	-0.154	0.157
36	-0.474	0.096	-4.92	-0.662	-0.285
37	-0.202	0.093	-2.16	-0.384	-0.019
38	-0.306	0.097	-3.16	-0.497	-0.116

39	-0.072	0.087	-0.83	-0.243	0.099
40	-0.166	0.086	-1.92	-0.336	0.003
41	0.570	0.058	9.87	0.457	0.684
42	0.489	0.059	8.33	0.374	0.604
43	0.401	0.059	6.76	0.285	0.517
44	0.327	0.060	5.42	0.209	0.445
45	0.293	0.063	4.64	0.169	0.416
46	0.220	0.065	3.40	0.093	0.347
47	0.523	0.063	8.24	0.398	0.647
48	0.480	0.065	7.41	0.353	0.607
49	0.538	0.058	9.31	0.425	0.651
50	0.506	0.058	8.73	0.392	0.619
51	0.535	0.057	9.39	0.423	0.647
52	0.478	0.057	8.41	0.367	0.589
53	1.448	0.049	29.32	1.351	1.545
54	1.338	0.050	26.91	1.241	1.436
55	1.377	0.050	27.68	1.279	1.474
56	1.372	0.050	27.55	1.275	1.470
57	0.876	0.051	17.13	0.776	0.977
58	0.909	0.051	17.67	0.808	1.009
59	1.011	0.051	19.87	0.911	1.111
60	1.065	0.052	20.63	0.963	1.166
61	1.160	0.050	23.29	1.062	1.257
62	1.172	0.050	23.46	1.074	1.270
63	1.262	0.050	25.08	1.164	1.361
64	1.253	0.050	24.92	1.154	1.351
65	0.956	0.051	18.91	0.857	1.055
66	1.024	0.052	19.87	0.923	1.125
67	1.114	0.053	21.22	1.011	1.217
68	1.082	0.053	20.48	0.979	1.186
69	1.783	0.047	37.65	1.690	1.876
70	1.782	0.047	37.65	1.690	1.875
71	1.924	0.047	41.11	1.832	2.015
72	1.855	0.047	39.51	1.763	1.947
73	1.103	0.051	21.51	1.002	1.203
74	1.057	0.051	20.58	0.956	1.158
75	1.741	0.048	36.50	1.647	1.834
76	1.727	0.048	36.07	1.633	1.821
77	-0.285	0.067	-4.23	-0.418	-0.153
78	-0.271	0.067	-4.02	-0.403	-0.139
79	-0.247	0.066	-3.75	-0.376	-0.118
80	-0.254	0.066	-3.83	-0.384	-0.124
81	0.468	0.055	8.44	0.359	0.576
82	0.476	0.055	8.62	0.367	0.584

83	0.553	0.056	9.92	0.444	0.662
84	0.509	0.056	9.03	0.399	0.620
85	0.857	0.056	15.23	0.746	0.967
86	0.831	0.056	14.78	0.721	0.941
87	0.815	0.056	14.47	0.704	0.925
88	0.783	0.057	13.82	0.672	0.894
89	1.677	0.048	35.24	1.584	1.771
90	1.686	0.048	35.29	1.592	1.780
91	1.646	0.047	34.82	1.553	1.738
92	1.625	0.047	34.42	1.533	1.718
93	0.004	0.057	0.07	-0.109	0.116
94	-0.131	0.060	-2.17	-0.249	-0.013
95	-0.028	0.059	-0.47	-0.143	0.088
96	-0.050	0.059	-0.86	-0.165	0.065
Year					
2001	-0.119	0.007	-15.95	-0.134	-0.105
2002	-0.626	0.008	-74.39	-0.642	-0.609
2003	-1.090	0.009	-118.18	-1.108	-1.072
2004	-1.511	0.017	-87.67	-1.545	-1.477
Program Type					
CHILDREN'S SHOW	-0.392	0.081	-4.84	-0.551	-0.233
CHILDREN'S SPECIAL	0.131	0.129	1.01	-0.122	0.383
FINANCE	-0.671	0.139	-4.83	-0.943	-0.399
FIRST-RUN SYNDICATION	-0.362	0.079	-4.59	-0.516	-0.207
GAME SHOW	-0.938	0.083	-11.35	-1.101	-0.776
HEALTH	-25.956	0.124	-208.68	-26.199	-25.712
MOVIE	-0.559	0.077	-7.24	-0.710	-0.408
MUSIC	-0.965	0.094	-10.24	-1.150	-0.780
MUSIC SPECIAL	-26.994	0.153	-176.76	-27.293	-26.694
NETWORK SERIES	-1.371	0.082	-16.80	-1.530	-1.211
NEWS	-1.496	0.075	-19.83	-1.644	-1.349
OTHER	-0.812	0.078	-10.36	-0.966	-0.659
PUBLIC AFFAIRS	-0.904	0.116	-7.82	-1.130	-0.677
RELIGIOUS	-0.285	0.088	-3.25	-0.457	-0.113
SPECIAL	-1.231	0.094	-13.06	-1.416	-1.046
SPORTS-RELATED	-0.494	0.082	-6.03	-0.654	-0.333
SYNDICATED	-0.828	0.077	-10.75	-0.979	-0.677
TALK SHOW	-1.813	0.078	-23.39	-1.965	-1.661
TEAM VS. TEAM	0.210	0.077	2.73	0.059	0.361
TV MOVIE	-26.739	0.084	-317.18	-26.904	-26.573
Constant	6.859	0.089	76.89	6.685	7.034

Table D-3a: Poisson Regression Results, Model 3 excluding WGN					
Distant Viewers	Coefficient Estimate	Robust Standard Error	Z-score	95% Confidence Interval	
Log of Market Size	0.491	0.001	375.97	0.489	0.494
Log of Local Ratings	0.198	0.000	746.46	0.197	0.198
Time of Day (Quarter Hour)					
2	0.012	0.009	1.43	-0.005	0.029
3	-0.076	0.009	-8.34	-0.094	-0.058
4	-0.112	0.010	-11.72	-0.130	-0.093
5	-0.322	0.010	-31.64	-0.342	-0.302
6	-0.316	0.010	-30.48	-0.336	-0.295
7	-0.375	0.011	-33.96	-0.397	-0.354
8	-0.402	0.012	-34.61	-0.425	-0.379
9	-0.885	0.014	-61.84	-0.913	-0.857
10	-0.926	0.015	-63.31	-0.955	-0.897
11	-1.008	0.016	-64.38	-1.038	-0.977
12	-1.134	0.017	-68.05	-1.166	-1.101
13	-1.529	0.021	-73.62	-1.569	-1.488
14	-1.577	0.021	-74.38	-1.619	-1.535
15	-1.911	0.023	-84.44	-1.955	-1.866
16	-2.032	0.024	-85.40	-2.078	-1.985
17	-2.198	0.027	-82.11	-2.251	-2.146
18	-2.282	0.028	-81.76	-2.336	-2.227
19	-2.412	0.028	-84.75	-2.467	-2.356
20	-2.465	0.028	-88.86	-2.520	-2.411
21	-2.106	0.024	-89.34	-2.152	-2.060
22	-2.157	0.023	-93.13	-2.202	-2.111
23	-2.054	0.021	-96.07	-2.096	-2.012
24	-2.089	0.021	-99.05	-2.131	-2.048
25	-1.414	0.015	-95.06	-1.443	-1.385
26	-1.418	0.015	-95.73	-1.447	-1.389
27	-1.283	0.014	-91.51	-1.311	-1.256
28	-1.288	0.014	-90.44	-1.316	-1.260
29	-1.058	0.012	-91.21	-1.081	-1.035
30	-1.043	0.012	-90.38	-1.066	-1.021
31	-0.923	0.011	-83.19	-0.945	-0.901
32	-0.926	0.011	-84.88	-0.948	-0.905
33	-0.701	0.010	-71.68	-0.720	-0.682
34	-0.682	0.010	-69.84	-0.701	-0.663
35	-0.635	0.010	-65.87	-0.654	-0.616
36	-0.645	0.010	-66.48	-0.664	-0.626

37	-0.460	0.009	-50.53	-0.478	-0.443
38	-0.453	0.009	-49.36	-0.471	-0.435
39	-0.392	0.009	-42.85	-0.410	-0.374
40	-0.404	0.009	-44.06	-0.422	-0.386
41	-0.405	0.009	-44.18	-0.423	-0.387
42	-0.410	0.009	-44.42	-0.428	-0.392
43	-0.393	0.009	-42.41	-0.411	-0.375
44	-0.417	0.009	-44.54	-0.435	-0.399
45	-0.349	0.009	-38.43	-0.367	-0.331
46	-0.343	0.009	-37.37	-0.361	-0.325
47	-0.385	0.009	-41.54	-0.404	-0.367
48	-0.418	0.009	-44.79	-0.437	-0.400
49	-0.501	0.010	-50.50	-0.520	-0.481
50	-0.516	0.010	-51.55	-0.535	-0.496
51	-0.483	0.010	-50.22	-0.502	-0.465
52	-0.497	0.010	-51.35	-0.516	-0.478
53	-0.452	0.009	-48.90	-0.470	-0.434
54	-0.453	0.009	-49.00	-0.471	-0.435
55	-0.457	0.009	-49.33	-0.475	-0.439
56	-0.475	0.009	-51.08	-0.493	-0.457
57	-0.439	0.009	-46.95	-0.457	-0.421
58	-0.440	0.009	-46.94	-0.458	-0.422
59	-0.432	0.009	-45.91	-0.450	-0.414
60	-0.462	0.009	-48.89	-0.480	-0.443
61	-0.221	0.009	-24.40	-0.239	-0.203
62	-0.238	0.009	-26.17	-0.255	-0.220
63	-0.241	0.009	-26.72	-0.259	-0.224
64	-0.261	0.009	-29.09	-0.279	-0.243
65	-0.220	0.009	-25.35	-0.237	-0.203
66	-0.242	0.009	-27.83	-0.259	-0.225
67	-0.251	0.009	-28.92	-0.268	-0.234
68	-0.277	0.009	-31.92	-0.294	-0.260
69	-0.245	0.009	-27.65	-0.262	-0.227
70	-0.258	0.009	-29.05	-0.275	-0.240
71	-0.236	0.009	-26.87	-0.254	-0.219
72	-0.251	0.009	-28.47	-0.268	-0.233
73	-0.129	0.009	-15.01	-0.146	-0.112
74	-0.128	0.009	-14.88	-0.144	-0.111
75	-0.001	0.008	-0.15	-0.017	0.015
76	-0.014	0.008	-1.64	-0.030	0.003
77	0.107	0.008	13.21	0.091	0.123
78	0.096	0.008	11.77	0.080	0.112
79	0.161	0.008	19.98	0.145	0.177
80	0.131	0.008	16.20	0.115	0.147

81	0.372	0.008	46.70	0.357	0.388
82	0.364	0.008	45.53	0.348	0.380
83	0.379	0.008	47.52	0.363	0.395
84	0.357	0.008	44.53	0.341	0.372
85	0.459	0.008	58.23	0.444	0.474
86	0.461	0.008	58.43	0.446	0.477
87	0.459	0.008	58.01	0.444	0.475
88	0.450	0.008	56.67	0.434	0.465
89	0.457	0.008	58.59	0.442	0.473
90	0.485	0.008	62.11	0.470	0.501
91	0.507	0.008	65.28	0.492	0.522
92	0.530	0.008	68.19	0.514	0.545
93	0.255	0.008	31.81	0.240	0.271
94	0.291	0.008	35.96	0.275	0.306
95	0.285	0.008	35.44	0.270	0.301
96	0.283	0.008	34.74	0.267	0.299
Year					
2001	-0.136	0.002	-76.37	-0.139	-0.132
2002	-0.648	0.002	-338.57	-0.652	-0.644
2003	-0.839	0.002	-400.47	-0.843	-0.835
2004	-1.208	0.004	-275.45	-1.217	-1.200
Program Type					
CARTOON	-1.850	0.069	-26.75	-1.986	-1.715
CHILDREN'S SHOW	-1.608	0.070	-22.82	-1.746	-1.470
CHILDREN'S SPECIAL	-1.397	0.081	-17.18	-1.556	-1.237
DAYTIME SOAP	-0.715	0.069	-10.38	-0.850	-0.580
FINANCE	-1.406	0.074	-18.87	-1.551	-1.260
FIRST-RUN SYNDICATION	-1.141	0.069	-16.56	-1.276	-1.006
GAME SHOW	-1.028	0.069	-14.92	-1.163	-0.893
HEALTH	-1.453	0.077	-18.94	-1.604	-1.303
HOBBIES & CRAFTS	-1.173	0.070	-16.82	-1.310	-1.037
INSTRUCTIONAL	-0.920	0.076	-12.16	-1.069	-0.772
MINI-SERIES	-1.393	0.071	-19.58	-1.533	-1.254
MOVIE	-1.747	0.069	-25.32	-1.882	-1.612
MUSIC	-1.879	0.072	-26.21	-2.019	-1.738
MUSIC SPECIAL	-1.222	0.070	-17.51	-1.359	-1.086
NETWORK SERIES	-1.272	0.069	-18.46	-1.407	-1.137
NEWS	-1.171	0.069	-17.01	-1.306	-1.036
OTHER	-1.002	0.069	-14.51	-1.137	-0.866
PLAYOFF SPORTS	-1.181	0.069	-17.03	-1.317	-1.045
PSEUDO-SPORTS	-0.645	0.072	-8.99	-0.786	-0.505
PUBLIC AFFAIRS	-1.346	0.069	-19.38	-1.482	-1.210

RELIGIOUS	-1.550	0.071	-21.87	-1.689	-1.411
SPECIAL	-1.314	0.069	-19.03	-1.450	-1.179
SPORTING EVENT	-0.671	0.069	-9.74	-0.807	-0.536
SPORTS-RELATED	-1.057	0.069	-15.29	-1.193	-0.922
SYNDICATED	-1.305	0.069	-18.96	-1.440	-1.170
TALK SHOW	-0.835	0.069	-12.12	-0.970	-0.700
TEAM VS. TEAM	-1.019	0.069	-14.78	-1.155	-0.884
TV MOVIE	-1.192	0.069	-17.26	-1.328	-1.057
Affiliation					
NETWORK	0.879	0.007	125.83	0.865	0.893
CW	0.780	0.007	106.69	0.766	0.794
INDEPENDENT	-1.625	0.016	-103.56	-1.656	-1.594
Constant	3.891	0.069	56.06	3.755	4.028

Table D-3b: Poisson Regression Results, Model 3 WGN only					
Distant Viewers	Coefficient Estimate	Robust Standard Error	Z-score	95% Confidence Interval	
Log of Local Ratings	0.409	0.008	50.50	0.393	0.425
Time of Day (Quarter Hour)					
2	-0.002	0.063	-0.03	-0.125	0.121
3	-0.168	0.069	-2.44	-0.304	-0.033
4	-0.164	0.070	-2.36	-0.301	-0.028
5	0.167	0.059	2.84	0.052	0.282
6	0.007	0.062	0.11	-0.115	0.128
7	0.180	0.057	3.13	0.067	0.292
8	0.042	0.060	0.71	-0.075	0.160
9	-0.530	0.066	-7.99	-0.660	-0.400
10	-0.607	0.068	-8.87	-0.741	-0.473
11	-0.415	0.068	-6.07	-0.549	-0.281
12	-0.378	0.069	-5.45	-0.514	-0.242
13	-0.573	0.073	-7.83	-0.716	-0.429
14	-0.594	0.074	-8.08	-0.739	-0.450
15	-1.183	0.100	-11.81	-1.380	-0.987
16	-1.191	0.100	-11.89	-1.387	-0.995
17	-1.085	0.074	-14.72	-1.229	-0.940
18	-1.315	0.081	-16.28	-1.474	-1.157
19	-1.230	0.077	-16.03	-1.381	-1.080
20	-1.212	0.076	-15.89	-1.362	-1.063
21	0.621	0.055	11.35	0.514	0.729
22	0.589	0.055	10.80	0.482	0.696
23	0.762	0.054	14.20	0.657	0.867
24	0.720	0.054	13.41	0.615	0.825
25	-1.959	0.129	-15.22	-2.211	-1.706
26	-1.978	0.129	-15.37	-2.230	-1.726
27	-1.840	0.125	-14.67	-2.086	-1.594
28	-1.868	0.125	-14.90	-2.113	-1.622
29	-0.858	0.087	-9.89	-1.028	-0.688
30	-0.759	0.086	-8.81	-0.928	-0.590
31	-0.541	0.078	-6.94	-0.693	-0.388
32	-0.588	0.079	-7.42	-0.743	-0.433
33	0.166	0.070	2.37	0.029	0.303
34	0.230	0.069	3.33	0.094	0.365
35	-0.021	0.080	-0.26	-0.177	0.135
36	-0.487	0.096	-5.06	-0.676	-0.298
37	-0.210	0.093	-2.25	-0.392	-0.027
38	-0.314	0.097	-3.24	-0.505	-0.124

39	-0.083	0.087	-0.96	-0.254	0.087
40	-0.169	0.086	-1.96	-0.339	0.000
41	0.574	0.058	9.94	0.461	0.687
42	0.495	0.058	8.46	0.380	0.609
43	0.390	0.059	6.57	0.273	0.506
44	0.307	0.060	5.10	0.189	0.426
45	0.292	0.063	4.63	0.168	0.415
46	0.219	0.065	3.39	0.093	0.346
47	0.522	0.063	8.23	0.398	0.647
48	0.480	0.065	7.40	0.352	0.607
49	0.538	0.058	9.31	0.425	0.651
50	0.505	0.058	8.73	0.392	0.619
51	0.535	0.057	9.38	0.423	0.647
52	0.478	0.057	8.41	0.367	0.589
53	1.449	0.049	29.33	1.352	1.545
54	1.338	0.050	26.91	1.240	1.435
55	1.376	0.050	27.67	1.279	1.474
56	1.372	0.050	27.54	1.274	1.469
57	0.876	0.051	17.12	0.776	0.976
58	0.908	0.051	17.66	0.807	1.009
59	1.011	0.051	19.86	0.911	1.110
60	1.064	0.052	20.62	0.963	1.165
61	1.159	0.050	23.28	1.062	1.257
62	1.171	0.050	23.46	1.073	1.269
63	1.262	0.050	25.07	1.163	1.360
64	1.252	0.050	24.91	1.154	1.351
65	0.956	0.051	18.90	0.857	1.055
66	1.024	0.052	19.87	0.923	1.125
67	1.114	0.052	21.21	1.011	1.216
68	1.082	0.053	20.47	0.978	1.185
69	1.783	0.047	37.65	1.690	1.875
70	1.782	0.047	37.65	1.689	1.875
71	1.923	0.047	41.10	1.831	2.015
72	1.855	0.047	39.50	1.763	1.947
73	1.102	0.051	21.49	1.001	1.202
74	1.056	0.051	20.57	0.955	1.157
75	1.740	0.048	36.48	1.646	1.833
76	1.726	0.048	36.06	1.632	1.820
77	-0.286	0.067	-4.24	-0.418	-0.154
78	-0.272	0.067	-4.03	-0.404	-0.139
79	-0.248	0.066	-3.76	-0.377	-0.118
80	-0.255	0.066	-3.84	-0.385	-0.125
81	0.467	0.055	8.43	0.359	0.576
82	0.475	0.055	8.61	0.367	0.583

83	0.552	0.056	9.91	0.443	0.662
84	0.509	0.056	9.03	0.398	0.619
85	0.856	0.056	15.22	0.746	0.966
86	0.830	0.056	14.76	0.720	0.940
87	0.815	0.056	14.47	0.704	0.925
88	0.785	0.057	13.84	0.673	0.896
89	1.676	0.048	35.22	1.583	1.770
90	1.685	0.048	35.28	1.591	1.779
91	1.645	0.047	34.81	1.552	1.738
92	1.625	0.047	34.41	1.532	1.717
93	0.004	0.057	0.06	-0.109	0.116
94	-0.131	0.060	-2.18	-0.250	-0.013
95	-0.028	0.059	-0.47	-0.143	0.088
96	-0.050	0.059	-0.86	-0.165	0.065
Year					
2001	-0.120	0.007	-16.06	-0.135	-0.105
2002	-0.625	0.008	-74.42	-0.642	-0.609
2003	-1.091	0.009	-118.28	-1.109	-1.073
2004	-1.511	0.017	-87.66	-1.544	-1.477
Program Type					
CHILDREN'S SHOW	-0.284	0.081	-3.50	-0.443	-0.125
CHILDREN'S SPECIAL	0.142	0.129	1.10	-0.111	0.394
FINANCE	-0.647	0.139	-4.65	-0.919	-0.374
FIRST-RUN SYNDICATION	-0.354	0.079	-4.49	-0.509	-0.199
GAME SHOW	-0.929	0.083	-11.22	-1.092	-0.767
HEALTH	-25.941	0.124	-208.40	-26.185	-25.697
MOVIE	-0.550	0.077	-7.11	-0.701	-0.398
MUSIC	-0.954	0.094	-10.12	-1.139	-0.769
MUSIC SPECIAL	-26.995	0.153	-176.69	-27.294	-26.695
NETWORK SERIES	-1.360	0.082	-16.65	-1.520	-1.200
NEWS	-1.486	0.076	-19.66	-1.634	-1.338
OTHER	-0.827	0.078	-10.54	-0.981	-0.673
PUBLIC AFFAIRS	-0.902	0.115	-7.82	-1.128	-0.676
RELIGIOUS	-0.281	0.088	-3.19	-0.453	-0.108
SPECIAL	-1.221	0.094	-12.93	-1.406	-1.036
SPORTS-RELATED	-0.492	0.082	-6.00	-0.652	-0.331
SYNDICATED	-0.818	0.077	-10.60	-0.969	-0.667
TALK SHOW	-1.802	0.078	-23.21	-1.954	-1.650
TEAM VS. TEAM	0.220	0.077	2.85	0.069	0.371
TV MOVIE	-26.736	0.084	-316.72	-26.901	-26.571
Constant	6.849	0.089	76.68	6.674	7.024

Table D-4: Regression Results, Subscriber Panel Data-Analysis (Fixed Effect)					
Log Distant Subscribers	**Coefficient Estimate**	**Robust Standard Error**	**t-statistic**	**95% Confidence Interval**	
Prior Year Log Distant Viewership	3.325	0.576	5.78	2.185	4.465
Prior Year Share IPG	5.405	4.473	1.21	-3.451	14.261
Year					
2002	0.470	0.158	2.98	0.158	0.782
2003	2.226	0.434	5.13	1.366	3.085
2004	2.899	0.579	5.01	1.754	4.045
2005	4.179	0.809	5.16	2.577	5.781
2006	0.227	0.217	1.04	-0.203	0.657
2007	0.113	0.230	0.49	-0.343	0.569
2008	0.362	0.262	1.38	-0.157	0.882
2009	0.222	0.248	0.90	-0.269	0.714
Constant	-42.302	9.746	-4.34	-61.599	-23.005

DECLARATION OF JEFFREY S. GRAY

I declare under penalty of perjury that the foregoing testimony is true and correct, and of my personal knowledge.

Executed on July 24, 2014

Jeffrey S. Gray, Ph.D.

TAB C

Before the
LIBRARY OF CONGRESS
Copyright Royalty Judges

In re **DISTRIBUTION OF 2004, 2005, 2006, 2007, 2008 and 2009 Cable Royalty Funds**	**DOCKET NO. 2012-6 CRB CD 2004-2009 (Phase II)**
In re **DISTRIBUTION OF 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008 and 2009 Satellite Royalty Fund**	**DOCKET NO. 2012-7 CRB SD 1999-2009 (Phase II)**

REBUTTAL TESTIMONY OF JEFFREY S. GRAY, PH.D.

March 27, 2015

Table of Contents

I. INTRODUCTION & SUMMARY OF CONCLUSIONS

1. I, Jeffrey Gray, am an economist and President of Analytics Research Group, LLC ("ARG"). ARG provides expert analysis concerning economic, statistical and data issues. The captioned Cable and Satellite proceeding ("Proceeding") was consolidated on August 29, 2014.[1] I provided initial testimony for this now consolidated Proceeding, which was filed on May 8, 2014 and amended on July 8, 2014.[2] For ease of exposition, in this report, I refer to my initial testimonies as a single submission even though it originally involved two separate testimonies, one for each of the then unconsolidated Cable and Satellite proceedings.[3] Similarly, I refer to the testimony submitted by Independent Producers Group ("IPG") and the Settling Devotional Claimants ("SDC") as though the Cable and Satellite proceedings were initially consolidated. Where appropriate, I note any relevant differences in the testimonies.

2. I understand that at issue in the current Phase II Proceeding is how to divide the 2004-2009 Cable Royalties and the 2000-2009 Satellite Royalties attributable to the Program Suppliers category between claimants represented by Motion Picture Association of America, Inc. ("MPAA") and claimants represented by IPG. As described in the Gray Direct Testimony, insofar as the *relative market value* of copyrighted retransmitted programming is the appropriate

[1] *See Order Of Consolidation And Amended Case Schedule*, Docket Nos. 2012-6 CRB CD 2004-2009 (Phase II) and 2012-7 CRB SD 1999-2009 (Phase II) at 1 (August 29, 2014).

[2] I filed corrected-amended testimony in the Satellite Proceeding filed on July 24, 2014.

[3] For this reason also, I refer to both my Cable and Satellite testimonies, as amended and corrected, as "Gray Direct Testimony."

criterion for dividing the royalty pool among claimants, relative program viewership provides a reasonable basis to divide the royalty pool in this Phase II Proceeding.[4]

3. In proposing what I believe to be a sound methodological approach to calculating the relative market value of the programming at issue, I relied on my training as an economist and statistician, my prior experience analyzing large databases, my prior experience estimating the economic value of products including copyrighted material, and my review of documents and materials related to this and prior proceedings. My background and qualifications are set forth in greater detail in my initial testimony.

4. On July 8, 2014, SDC submitted the testimonies of Erkan Erdem (collectively, "Erdem Amended Testimony"). The Erdem Amended Testimony proposes a methodology to allocate royalty funds between claimants represented by SDC and IPG in the Devotional category. This methodology is based on the actual viewing patterns of programming and as such is consistent with the methodology I proposed in the Gray Direct Testimony. As described later in this testimony, because my methodology is applied to a more complete data, it is my opinion that my proposed methodology provides a better approach to allocate royalty shares in the Program Suppliers category.

5. Also on July 8, 2014, IPG submitted the testimonies of Raul C. Galaz (collectively, "Galaz Amended Testimony") and the supplemental testimonies of Laura Robinson (collectively, "Robinson Supplemental Report"). The Galaz Amended Testimony does not propose a distribution methodology nor does it propose a royalty share allocation between

[4] *See generally Final Determination of Distributions Phase II* (August 13, 2013), 75 Fed. Reg. 64984 (Oct. 30, 2013) (henceforth "*2000-2003 Phase II Final Determination*"), *see also* 75 Fed. Reg. 57063 (Sept. 17, 2010).

MPAA and IPG.[5] In her report, Robinson purports to complete her "analysis of the relative market value of the retransmitted broadcasts claimed by IPG and the Non-IPG Claimants and estimate the share of royalties attributable to IPG."[6]

6. In this testimony I explain how Robinson's proposed relative market value analysis (the "Robinson Analysis") does not provide either a reliable distribution methodology or a reasonable estimate of the share of Cable or Satellite royalties allocable to the competing parties. I also explain why Robinson's own description of her approach to determining the relative value of programming supports, instead, the incompleteness and unreliableness of her calculated royalty shares.

7. For the reasons set out below, my conclusions regarding calculating the relative market value of MPAA and IPG programming described and reported in the Gray Direct Testimony are unaltered by Galaz's or Robinson's testimony. Adjustments to my proposed royalty allocation calculations result from the CRJs decisions concerning the validity and classification of certain claimed representations by IPG claims and MPAA.[7]

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[5] The Galaz Amended Testimony presents what Galaz characterized as a "logic"-based argument that an individual program's *anticipated* viewership rather than its actual viewership should be used as a measure of its relative economic value. Galaz Amended Testimony at p. 3. In a prior Phase II Proceeding, the Copyright Royalty Judges ("CRJs") concluded that viewership, as measured after the airing of retransmitted programs, is a reasonable proxy for the viewership-based value of those programs (*2000-2003 Phase II Final Determination*, p. 36). Even if anticipated viewership of an individual program were a preferred measure of value, IPG does not propose a royalty share allocation based on each program's anticipated viewership. Furthermore, because a program's viewership and ratings are highly correlated over time, actual viewership levels provide the best available estimate of anticipated viewership.

[6] Robinson Supplemental Report at par. 3.

[7] *See Ruling and Order Regarding Claims and Separate Opinion*, Docket No. 2008-1 CRB CD 98-99 at 20-21 (June 18, 2014) and *Memorandum Opinion and Ruling on Validity and Categorization of Claims*, Docket Nos. 2012-6 CRB CD 2004-2009 (Phase II) and 2012-7 CRB SD 1999-2009 (Phase II) (March 13, 2015) henceforth "*March 13 Opinion and Ruling*." In addition, my updated calculations rely upon Canadian Radio-television and Telecommunications Commission ("CRTC") program longs for 2000-2009 to determine country of origin of programming broadcasting on Canadian stations. At the time of my original testimony, I only had access to 2000-2003 data. However, many program titles broadcast during 2000-2003 years continued to be broadcast in subsequent years. As a result, relying upon CRTC logs for the entire 2000-2009 had an immaterial impact on my calculations.

a. My updated analysis finds MPAA shares of the total Cable Program Suppliers royalty pools are 99.59%, 99.55%, 99.32% 99.28%, 99.19%, and 99.39% in the years 2004, 2005, 2006, 2007, 2008, and 2009, respectively. IPG shares of the total Cable Program Suppliers royalty pools are 0.41%, 0.45%, 0.68%, 0.72%, 0.81%, and 0.61% in the years 2004, 2005, 2006, 2007, 2008, and 2009, respectively.

b. My updated analysis finds MPAA shares of the total Satellite Program Suppliers royalty pools are 99.65%, 99.77%, 99.80% 99.61%, 99.87%, 99.78, 99.73%, 99.74%, 99.77%, and 99.58% in the years 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, and 2009, respectively. IPG shares of the total Satellite Program Suppliers royalty pools are 0.35%, 0.23%, 0.20%, 0.39%, 0.13%, 0.22%, 0.27%, 0.26%, 0.23%, and 0.42% in the years 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, and 2009, respectively.

II. OVERVIEW OF THE ROBINSON ANALYSIS

8. The Robinson Analysis can be summarized in three steps performed in each royalty year separately for Cable and Satellite. First, she calculates IPG's share of hours of compensable distantly retransmitted broadcasts. Second, she calculates three shift factors in an attempt to account for differences in the relative value of an hour of IPG programming. Third, she applies these shift factors to the volume share calculated in step one to obtain three separate estimates for IPG's royalty share. None of the three royalty share estimates measures the relative value of IPG and MPAA programs that are retransmitted. Robinson does not state which of the three flawed royalty share calculations is preferred. Instead, she reports them in a range and calculates the

midpoint of this range. Robinson does not explain why this midpoint might be a reasonable royalty share estimate. As I describe later in this testimony, I know of no economic rationale why it would be.

9. I identify the three Robinson shift factors as *Time of Day*, *Fees Paid*, and *Subscriber Count* shift factors.

10. Robinson's *Time of Day* shift factors are not based on the relative viewing levels of specific programs. Rather, her shift factors are based on estimates of the relative total number of television viewers for each quarter hour throughout the day.[8] She obtains the estimates of the total number of television viewers by quarter hour from Nielsen.[9] She weights these estimated quarter-hour total average viewership levels by the percentage of IPG and MPAA programming that occurred in each quarter hour of the day to arrive at a time of day viewership metric for IPG and MPAA. The ratio of IPG's time of day average to MPAA's time of day average is the IPG *Time of Day* shift factor. In the Robinson Supplemental Report filed prior to the *March 13 Opinion and Ruling*, she determined that between 2004 and 2009, IPG's *Time of Day* shift factor averaged 74.03% for Cable. For Satellite, Robinson calculated two *Time of Day* shift factors based on two different measures of total U.S. quarter-hour viewing. Robinson found that between 2000 and 2009 IPG's *Time of Day #1* shift factor, based on Nielsen Satellite Diary data, averaged 86.51% and IPG's *Time of Day #2* shift factor, based on Nielsen National Viewing data, averaged 84.73%.[10]

[8] *See* Robinson Supplemental Report for a description of the data she relies upon.

[9] For her Cable analysis, Robinson relies upon 2000-2004 Nielsen Diary Data measuring the amount of distant viewing of programs on a sample of stations distantly retransmitted by CSOs. For her Satellite analysis, Robinson relies upon two Nielsen data sources: (1) 2000-2004 Nielsen Diary Data measuring total viewing of programs on a sample of stations distantly retransmitted stations by SSOs and (2) 2000-2009 Nielsen National Viewing Data.

[10] *See* Robinson Cable Supplemental Report at Table 7A, and Robinson Satellite Supplemental Report at Table 6A and Table 7A.

11. Each of these *Time of Day* shift factors are less than 100%, reflecting that in addition to having fewer total programming hours, IPG's programming tended to air and be retransmitted during quarter hours with lower average television viewership. Robinson makes no adjustment to any of these shift factors for whether, or to what extent, any IPG programming was actually viewed. That is, Robinson ignores the Nielsen data measuring the viewing levels of each individual program. As a result, Robinson's proposed royalty shares based on the *Time of Day* shift factors do not measure the relative market value of the individual IPG and MPAA programs that are retransmitted.

12. Robinson's *Fees Paid* shift factors, calculated only for her Cable Analysis, are based on Cable Data Corporation data of retransmission fees paid by Cable System Operators ("CSOs"). Separately for IPG and MPAA, Robinson weights CSOs' fees paid by the relative volume of claimants' programming carried by the CSOs. The ratio of IPG's to MPAA's average fees paid by CSOs that distantly retransmitted the stations that IPG and MPAA programs were broadcasted is the IPG *Fees Paid* shift factor. Robinson calculated that IPG's *Fees Paid* shift factor averaged 213.08% between 2004 and 2009, implying that IPG's programming tended to be broadcasted and retransmitted by CSOs with greater fees paid in the sample Robinson analyzed.[11] Robinson makes no adjustment for whether, or to what extent, the programming was distantly viewed.

13. Robinson's *Subscriber Count* shift factors are based on Cable Data Corporation data of the number of subscribers to CSOs and Satellite System Operators ("SSOs"). Separately for IPG and MPAA, Robinson weights the number of subscribers of each cable or satellite system by the relative volume of claimed programming carried by the CSO or SSO. The ratio of IPG's to

[11] *See id.* at Table 6A.

MPAA's average subscriber count by the operators which distantly retransmitted the stations IPG and MPAA programs were broadcasted are the IPG *Subscriber Count* shift factors.

14. IPG's *Subscriber Count* shift factor averaged 194.83% for Cable between 2004 and 2009 and 142.22% for Satellite between 2000 and 2009, implying that IPG's programming tended to be broadcasted on stations carried by CSOs and SSOs with more subscribers.[12] Again, Robinson makes no adjustment for whether, or to what extent, the distantly retransmitted programming was viewed by the subscribers.

15. Robinson applies these three types of shift factors to IPG's share volume measure calculated in her first step to arrive at three distinct royalty share estimates for Cable and for Satellite. None of Robinson's calculations incorporates measures of subscriber demand as measured by viewing choices. Rather, each Robinson royalty share estimate is a supply-side measure because each is based on IPG's share of programming volume. One royalty share estimate is based on IPG volume share adjusted by the relative time-of-day the programming aired. The second royalty share estimate is based on IPG's volume share adjusted by the relative fees paid by CSOs carrying the programming. The third royalty share estimate is based on IPG volume share adjusted by the relative subscriber count of CSOs carrying the programming.

16. Table 1 below presents Robinson's royalty share estimates reported in her initial testimony. While these royalty share estimates likely have changed due to the *March 13 Opinion and Ruling*, the estimates do highlight the variability in Robinson's proposed royalty shares *within* each Cable and Satellite royalty year. These differences are most pronounced between estimates based on Robinson's *Time of Day* shift factors and estimates based on Robinson's *Fees Paid* or *Subscriber Count* shift factors.

[12] Robinson Supplemental Report, Table 5A.

Table 1: Robinson Royalty Share Estimates as Reported in her Initial Testimony and Attachments

	Cable IPG Volume/Royalty Share Estimates By Shift Factor Adjustment			Satellite IPG Volume/Royalty Share Estimates By Shift Factor Adjustment		
Royalty Year	*Time of Day*	*Fees Paid*	*Subscriber Count*	*Time of Day #1*	*Time of Day #2*	*Subscriber Count*
2000				5.43%	5.28%	6.76%
2001				5.19%	4.96%	6.41%
2002				4.84%	4.60%	6.70%
2003				3.09%	3.26%	5.46%
2004	3.63%	8.10%	7.93%	2.49%	2.63%	5.53%
2005	3.73%	8.29%	8.11%	3.20%	3.33%	5.66%
2006	4.03%	11.93%	11.07%	3.52%	3.61%	7.76%
2007	4.25%	12.33%	11.69%	3.93%	3.80%	7.86%
2008	3.74%	12.45%	11.46%	3.92%	3.76%	6.64%
2009	3.19%	10.71%	7.32%	3.50%	3.37%	5.22%

Note: Robinson reports range of shares in Robinson Supplemental Report Table 9, at p.22. I calculated each of Robinson's proposed royalty shares applying her methodology to the data presented in Robinson Supplemental Report Tables 5-7.

17. The Robinson Analysis contains both conceptual and application flaws which render its calculated IPG royalty shares biased, unreasonable, and unreliable. The next section describes conceptual flaws in the Robinson Analysis causing its royalty share estimates to be unreliable. The subsequent section describes errors and flaws in Robinson's application of her analysis that are potentially correctable, yet contribute to biased royalty share estimates.

III. CONCEPTUAL FLAWS IN THE ROBINSON ANALYSIS

18. In discussing the motivation for her analysis, Robinson states that the number of distant subscribers and/or fees paid by the CSO or SSO carrying a distantly retransmitted program, as well as the time-of-day the program aired, are economic indicia of value.[13] However, because the number and type of distant signals carried by CSO/SSOs are a function of the regulatory

[13] Robinson Supplemental Report par 22.

scheme, they are at best flawed indicia of value. In my opinion, insofar as broadcast time-of-day, subscriber count, and fees paid are associated with higher distant viewership opportunities, each index is associated with higher *potential* relative market value. For example, a program retransmitted at a time of day when more people are viewing television, such as prime time, would be available to a larger audience and therefore would have an *opportunity* for more viewing than a program broadcast and retransmitted in the middle of night. Similarly, a program carried by a SSO or CSO with more subscribers, and therefore greater fees paid, has an *opportunity* for greater viewing than a program carried by SSOs or CSOs with few subscribers and low fees paid. Since each of Robinson's proposed measures of a program's value only measures the program's *opportunity* for viewing, each is, at best, an indirect and incomplete measure of a program's actual viewing. In measuring the relative market value of programming, it is critical to assess whether opportunities for greater viewing are in fact associated with more viewing. That is, it is critical to examine the underlying subscriber demand for the distantly retransmitted programs as measured by the viewing choices subscribers make. None of Robinson's measures do this.

19. Robinson's discussion of the motivation for her analysis repeatedly uses the qualifying phrase "*ceteris paribus*," meaning all else equal or holding other pertinent factors constant.[14] For example, she argued that, all else equal, programs broadcasted and retransmitted at the time of day with higher average total viewership can be ascribed greater value. First, Robinson's inference is not axiomatic as a program airing during peak average viewing times may not

[14] *Ibid.*

necessarily have anyone viewing the retransmission.[15] Conversely, programs airing off-peak may in fact have significant demand in distant markets. Secondly, if broadcast time of day is an economic indicator of value, as Robinson argues, then Robinson's royalty share estimates based on IPG's *Fees Paid* and *Subscriber Count* shift factors are incomplete and unreliable. Robinson's estimates based on IPG's *Fees Paid* and *Subscriber Count* shift factors do not take the time of day a program is broadcast into account. Thus, each of those royalty share estimates for both Cable and Satellite, according to Robinson's own testimony, are themselves incomplete.

20. Similarly, according to her own testimony, Robinson's remaining royalty share estimates, which are based on the *Time of Day* shift factors, suffer from the same flaw – they are incomplete. None of Robinson's royalty share estimates based on IPG's *Time of Day* shift factors take into account the varying customer reach of cable systems or satellite systems, as measured by CSO and SSO fees paid or subscriber count. Robinson's reported royalty share allocations based on the IPG *Time of Day* shift factors would suggest that programs airing at the same time of day with vastly different subscribers should have the same royalty share allocation. Therefore, Robinson's royalty share estimates based on the *Time of Day* shift factors are incomplete and unreliable.

21. The lack of reliability of each of Robinson's shift factors and resulting royalty share estimates is underscored by the fact that each measure can *increase* when a program is eliminated. This can happen if the eliminated program had been retransmitted (1) during a time of day with relatively fewer average total subscribers, or (2) had been retransmitted by an SSO or CSO with lower average fees paid, or (3) had been retransmitted by an SSO or CSO with lower average total subscribers. As the CRJs concluded in a recent Phase II Proceeding, "Simply put,

[15] Because CSOs and SSOs must retransmit broadcast stations entire lineup *in toto*, it is possible that specific programs broadcasted on the station may have little or no value to the CSOs and SSOs. This can be assessed by analyzing the distant viewing of each specific program.

when a purported measure of program value can move inversely to the addition or subtraction of a claimant, the measure is, at best, of minimal assistance in determining relative market value."[16] In contrast, when relying upon a viewing-based measure for allocating royalties, such as the one I proposed in the Gray Direct Testimony, adding a claimant of programming that has positive viewing can only lead to an increase in relative market value. Conversely, deleting a claimant that has positive viewing can only lead to a decrease in relative market value. Thus, in each of the Cable and Satellite royalty years at issue, none of IPG's proposed royalty shares takes into account all three indicia of economic value Robinson herself highlights.

22. Robinson reports her three proposed royalty shares in a "range" and reports the midpoint of the range. By construction, this midpoint is in between Robinson's *Time of Day* adjusted royalty shares and Robinson's *Fees Paid* / *Subscriber Count* adjusted royalty shares. I do not know of, nor has Robinson put forth, any economic motivation why the midpoint of two incomplete and unreliable royalty share calculations is itself a reasonable or appropriate royalty share calculation.

23. Furthermore, each of Robinson's proposed royalty shares is based only on supply side metrics that measure viewership *opportunities* and ignores subscriber consumption choices as measured by actual program viewing. By ignoring subscriber demand, Robinson's methodology cannot fully gauge the relative market value of the programming at issue.[17] For example, two programs with vastly different consumer demand that aired at about the same time of day and were carried by system operators with a similar number of subscribers would have similar

[16] *Final Determination of Distributions of 1999 Cable Royalty Funds (Phase II)* (January 14, 2015); 80 Fed. Reg. 13423 (March 13, 2015). The CRJs' critique related to Robinson's subscriber-based measure. However, the criticism also applies to Robinson's time-of-day and fees-paid based measures.

[17] Program viewing levels are the result of both demand *and* supply factors. None of Robinson's calculations directly measure subscriber demand. For a more detailed discussion of the appropriate application of the relative market value standard and how ignoring actual viewing can lead to biased royalty share calculations, *see* Section IV.A in the Gray Direct Testimony.

royalty shares under Robinson's methodology. At the extreme, this would be the case if one of the programs had zero demand and zero distant viewing, and the other program had high subscriber demand as demonstrated by high program viewing. By ignoring subscriber demand for individual programs, Robinson's statistics cannot measure the relative economic value of programing at issue and should not be used in establishing appropriate IPG and MPAA royalty shares.

24. Table 2 below illustrates the flaw in Robinson's methodology with three sets of examples. In each set are two programs, one claimed by IPG and the other by MPAA. The programs aired at the same time of day and on the same station – and therefore with the same number of distant subscribers and fees generated. Yet, in each example, the viewing of the two programs is substantially different.

Table 2: Robinson Methodology Yields Identical Royalty Shares for Programs with Disparate Viewing

Year	*Quarter Hour*	*Station*	*Distant Subscribers*	*Program Title*	*Local Ratings*	*Distant Viewing*	*Claimed Representative*
2004	68	KMBC	193,413	Main Floor	0.71	380	IPG
2004	68	KMBC	193,413	Oprah Winfrey	14.72	2,065	MPAA
2004	90	CBET	856,401	Kenny vs. Spenny	0.22	1,006	IPG
2004	90	CBET	856,401	XXVII Summer Olympics	2.60	13,009	MPAA
2006	67	WDRB	129,774	Steel Dreams	0.28	95	IPG
2006	67	WDRB	129,774	NASCAR Racing	11.10	4,688	MPAA

25. In the first example in Table 2, IPG's claimed program *Main Floor* had a local Nielsen rating of 0.71 and 380 households distantly viewing whereas MPAA's claimed Program *Oprah Winfrey* had local ratings and distant viewing of 14.72 and 2,065, respectively. In the next example, *Kenny vs. Spenny*, a Canadian television show, had a rating of 0.22 in local markets with 1,006 households distantly viewing whereas the XXVII Summer Olympics claimed by MPAA was viewed by approximately 12 times as many households with a 2.6 local rating and 13,009 distant viewing.[18] The final example shows that *Steel Dreams* had a 0.28 local rating and was watched distantly by 95 households. Airing on the same station at the same time of day, *NASCAR Racing* had an 11.10 local rating and was watched distantly by 4,688 households. Because the Robinson Analysis does not account for the relative value of the program based on actual viewing its resulting royalty share allocations could cause copyright owners of valuable programming to receive disproportionately small royalty awards.

26. It is my opinion that the conceptual flaws of the Robinson Analysis render its reported royalty shares incomplete and unreliable. This would be the case even if the Robinson Analysis did not have any errors or flaws in its application. The next section delineates several flaws and errors in the application of the Robinson Analysis that cause its reported statistics to be both biased and unreliable.

[18] I understand that because *Kenny vs. Spenny* is a Canadian-originated program broadcasted on a Canadian station, it is compensable only in the Canadian Claimants Group category, which is not at issue in this Proceeding. *See* Written Rebuttal Testimony of Marsha E. Kessler (filed May 15, 2013). As described later in this testimony, Robinson treats such non-compensable IPG-claimed programs as compensable.

IV. APPLICATION ERRORS & FLAWS IN THE ROBINSON ANALYSIS

A. Robinson Relies on a Non-Random Sample and Filtered Data

27. The Robinson Analysis is based on the *overlap* of two stratified random samples – the Robinson Sample where the strata are based on CSO and SSO fees generated, and the Gray Sample where the strata are based on CSO and SSO subscriber counts.[19] This overlap is itself not a random sample and not representative of the population of stations carried by CSOs or SSOs. Instead, the overlapping non-random sample is biased towards including larger stations. This bias is evidenced in the sample means reported in the Robinson Supplemental Report. In the Robinson random samples, IPG-represented retransmitted broadcasts were carried on stations with an average 213,834 distant subscribers for Cable and 5,376,976 distant subscribers for Satellite. However, in the non-random Cable and Satellite overlap samples, Robinson calculated that IPG-represented retransmitted broadcasts were carried on stations with an average of 672,514 distant subscribers for Cable and 7,677,011 distant subscribers for Satellite. (Robinson Supplemental Report, par. 16 and Table 5A). Because the Robinson Analysis is based on a non-random sample, its use is limited.

28. In addition to analyzing a non-random sample, Robinson relies upon filtered data and provides no explanation of how the data were filtered. In particular, Robinson relies on broadcast data from Tribune Media Services ("Tribune") that includes information regarding program title, program length, as well as broadcast date, time and station. However, the Tribune data that Robinson relied on for her analysis does not contain information for 24 hours per day, 7 days a week for every station in her sample. That is, for many stations in the Tribune data that I understand Robinson relied on for her analysis, there are hours of missing information. In

[19] It is unclear from the Robinson Supplemental Report whether the sample used in her analysis for Satellite is a random sample. The intersection of a non-random sample and a stratified random sample is also not representative of the population from which they were drawn.

contrast, the broadcast data I received from Tribune for the analysis presented in my direct testimony, and that I understand was provided to IPG in discovery, contained information for every station in my random sample, 24 hours per day, 7 days a week. My Tribune data set did not contain a single 15 minute interval of missing information. Moreover, my Tribune data set included information to determine whether the retransmitted broadcasts were compensable. That information was not included in the Tribune data IPG provided in discovery.

B. Robinson Incorrectly Attributes Titles To IPG For Years That IPG Did Not Assert Claims For Such Titles.

29. In discovery, IPG provided a list of claimants and associated program titles that it claims to represent in this Proceeding.[20] This program list included information regarding years of claimed IPG representation. However, for many of IPG's claimed programs, Robinson does not correctly apply the time restriction indicated in IPG's documents. For example, for Cable, IPG claims the program title *Three Stooges* only for the years 2007 through 2009. Yet, the Robinson Analysis counted each of the 942 retransmissions of *Three Stooges* from 2004 through 2006 as IPG-represented compensable retransmissions. Similarly, for Satellite, IPG claims the series *General Hospital* only for the year 2000 and not for any year from 2001 through 2009. Yet, the Robinson Analysis counted each of these unclaimed 16,766 retransmissions of *General Hospital* from 2001 through 2009 as IPG-represented compensable retransmissions.

30. Table 3 below presents the top retransmitted program titles I have been able to identify that IPG does not claim yet the Robinson Analysis attributes to IPG due to her time restriction

[20] This list was provided as a Microsoft Excel spreadsheet titled *1999-2009_IPG_TITLES_(confirmed_8)(Navigant).xlsx*.

mistake.[21] The second and fourth columns report the number of retransmissions incorrectly attributed to IPG for Cable and Satellite, respectively.

Table 3: Robinson time restriction error materially overstates IPG's claims.			
Program Title	*Cable Retransmissions Incorrectly Claimed*	*Program Title*	*Satellite Retransmissions Incorrectly Claimed*
The Three Stooges	942	General Hospital	16,766
The Abbott & Costello Show	295	Lost	2,076
Lassie	241	Blind Date	1,151
In Too Deep	24	Sir Arthur Conan Doyle's The Lost World	876
The Scorpio Factor	5	America's Black Forum	807
Wicked	4	The Three Stooges	575
Solitaire for 2	3	Tempur Pedic	410
War Dogs	2	Flashpoint	320
Inside the Goldmine	1	Bowflex	237
Mutant on the Bounty	1	Bloomberg on the Markets	194
Prisoners of the Sun	1	Galidor: Defenders of the Outer Dimen..	152
Sleeping With Strangers	1	*All Other Titles*	*2,221*
Total	**1,520**	**Total**	**25,785**

31. Due to the relatively small number of programs and associated retransmissions claimed by IPG, Robinson's time restriction mistake leads to a significant increase in her royalty share calculations.

[21] Table 3 excludes program titles which Robinson incorrectly attributed to IPG yet the CRJs deemed the claims were invalid in the *March 13 Opinion and Ruling*.

C. Robinson Incorrectly Attributes A Title to IPG That IPG Did Not Claim

32. Robinson includes the program *Tomorrow's World* that aired on WGN as a claimed IPG-represented program for each royalty year. IPG's documents indicate the IPG Claimant associated with that title is BBC Worldwide. Although BBC Worldwide produced a television series on new developments in science and technology called *Tomorrow's World*, that program aired on BBC1 and went off the air in 2003. The program *Tomorrow's World* that aired on WGN that Robinson erroneously attributes to IPG is a religious program that IPG does not claim to represent. I understand that this erroneously attributed program is produced by the Living Church of God, and causes Robinson's royalty share calculation to be biased in favor of IPG.

D. Robinson Incorrectly Calculates Program Length For MPAA Programs

33. In the Tribune data I received and that I understand was provided to IPG in discovery, a program of length "100" referred to an hour long broadcast, a program of length "200" referred to a two-hour long broadcast, and so forth. However, in both her Cable and Satellite analyses, Robinson treated such lengths as minutes, thus overstating the volume of many programs and incorrectly calculating total volume.

E. Robinson Counting Non-Compensable Titles as Compensable

34. Robinson treats all IPG-claimed programming aired on Canadian stations as compensable, including programming which originated from countries other than the United States. In contrast, in my direct testimony analysis, programming on Canadian stations which originated outside the U.S. are *not* designated as compensable programming.[22] As a result, all MPAA-claimed programming broadcast on Canadian stations that originated outside the U.S. is

[22] As stated in my initial testimony, I understand such programs are compensable only in the Canadian Claimants Group category, which is not at issue in this proceeding. *See* Written Rebuttal Testimony of Marsha E. Kessler (filed May 15, 2013).

treated as not compensable and excluded from the Robinson Analysis. This unequal treatment of similar programming leads Robinson's volume share and royalty share calculations to be biased.

V. SDC METHODOLOGY SUPPORTS VIEWING AS A RELATIVE VALUE MEASURE

35. The Erdem Amended Testimony argues that actual viewing patterns provide a reliable methodology to measure the relative market value of programming. Based on local ratings and distant viewing data for 1999, Erdem performed a statistical analysis to demonstrate that there is a strong correlation between a program's local rating and its distant viewership as a percentage of its distant subscribers.[23] He then proceeded to use local ratings as a measure of distant ratings in his proposed royalty allocation methodology. In my opinion, a preferred methodology to measure a program's viewing and therefore its relative market value is to rely upon the strong correlation between distant viewing and local ratings, as well as other programming indicia, to estimate each program's distant viewing levels. Relative distant viewing levels then provide a direct measure of a program's relative market value. This is the methodology I proposed and described in the Gray Direct Testimony.

A. Erdem Determines that WGN is an Anomalous Station

36. In his amended testimony, Erdem described the station WGN as an economic outlier "which requires detailed investigation and analysis."[24] Erdem reached this conclusion based on a review of the relative number of distant subscribers of WGN coupled with the low percentage of compensable programming that was distantly retransmitted on that station. An additional reason that WGN is an anomalous station requiring independent analysis is that the mathematical

[23] *See also* Appendix D in the Gray Direct Testimony for evidence of a statistically significant correlation between local ratings and distant viewing.

[24] Erdem Amended Testimony, p. 12.

relationship between viewing and a station's number of distant subscribers is different for WGN than the remaining distantly retransmitted signals randomly sampled.[25] The methodology presented in my original testimony took this difference into account by calculating distant viewing separately for WGN and other the signals analyzed.

37. In contrast, the Robinson Analysis makes no adjustment for WGN. As a result, the handful of programs IPG claims, that aired on WGN, have an inappropriately large impact on Robinson's subscriber count and fees paid royalty measures. This programming includes the incorrectly attributed program *Tomorrow's World* described above.

V. CONCLUSIONS & UPDATED ROYALTY SHARE ESTIMATES

38. In this testimony I explained how the Robinson Analysis does not provide either a reliable distribution methodology or a reasonable estimate of the shares of Cable or Satellite royalties allocable to MPAA and IPG. I also explained why the distribution methodology proposed by SDC is inferior to the methodology I proposed in the Gray Direct Testimony for the allocation of royalties in the Program Suppliers category. The only adjustments to my proposed royalty allocation calculations result from the CRJs' decisions concerning the validity and classification of certain claimed representations by IPG and MPAA.[26]

39. Table 4 below reports my updated calculations of MPAA viewership shares each royalty year following the methodology described in my initial testimony for Cable and Satellite. The tables also present the 95% confidence intervals associated with each viewership share

[25] *See* Gray Amended Testimony Appendix Tables D.

[26] *See March 13 Opinion and Ruling*. As described above, I also updated my calculations relying upon CRTC logs from 2000-2009 where appropriate. However, this update had an insignificant impact on royalty share calculations.

calculation.[27] The methodology to calculate the relative annual viewing levels are based on econometric models which take into account individual program popularity as measured by local ratings and generated estimates of distant viewing for *all* MPAA and IPG-claimed represented programs retransmitted by randomly selected stations, for every day of each royalty year.[28] These viewership shares correspond to reasonable cable royalty shares.

Table 4: Updated MPAA Cable and Satellite Viewing Shares Applying *March 13 Opinion and Ruling*

	Updated MPAA Share of Viewing with 95% Confidence Intervals	
Year	*Cable*	*Satellite*
2000		99.65 (99.64 – 99.67)
2001		99.77 (99.76 – 99.79)
2002		99.80 (99.79 – 99.81)
2003		99.61 (99.59 – 99.63)
2004	99.59 (99.45 – 99.66)	99.87 (99.86 – 99.88)
2005	99.55 (99.34 – 99.56)	99.78 (99.76 – 99.79)
2006	99.32 (99.14 – 99.37)	99.73 (99.40 – 99.70)
2007	99.28 (99.07 – 99.33)	99.74 (99.72 – 99.75)
2008	99.19 (99.13 – 99.24)	99.77 (99.75 – 99.78)
2009	99.39 (99.30 – 99.45)	99.58 (99.57 – 99.60)

40. As reported in the second column in Table 4, MPAA's cable viewership shares, and therefore reasonable cable royalty shares, are 99.59% in 2004, 99.55% in 2005, 99.32% in 2006,

[27] The confidence intervals are calculated applying the bootstrap methodology. *See* Efron, B.; Tibshirani, R. (1986). "Bootstrap Methods for Standard Errors, Confidence Intervals, and Other Measures of Statistical Accuracy." *Statistical Science* 1(1), 54-77.

[28] These models were referred to as "Model Three" in my original testimony.

99.28% in 2007, 99.19% in 2008, and 99.39% in 2009. IPG's implied cable royalty shares are 0.41% in 2004, 0.45% in 2005, 0.68% in 2006, 0.72% in 2007, 0.81% in 2008, and 0.61% in 2009.

41. As reported in the final column in Table 5, MPAA compensable programming accounted for 99.65%, 99.77%, 99.80%, 99.61%, 99.87%, 99.78%, 99.73%, 99.74%, 99.77%, and 99.58% of the total Program Supplier programming retransmitted by SSOs over the years 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, and 2009, respectively. MPAA therefore has an implied Satellite royalty share in those amounts for each year. IPG has the remaining Satellite royalty shares of 0.35%, 0.23%, 0.20%, 0.39%, 0.13%, 0.22%, 0.27%, 0.26%, 0.23%, and 0.42% over the years 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, and 2009, respectively.

DECLARATION OF JEFFREY S. GRAY

I declare under penalty of perjury that the foregoing testimony is true and correct, and of my personal knowledge.

Executed on March 27, 2015

Jeffrey S. Gray, Ph.D.

TAB D

Before the
COPYRIGHT ROYALTY JUDGES
Washington, D.C.

IN THE MATTER OF:	
	Docket No.
Distribution of the 2004-2009 Cable Royalty Funds	2012-6
	CRB CD 2004-2009 (Phase II)
IN THE MATTER OF:	
	Docket No.
Distribution of the 1999- 2009 Satellite Royalty Funds	2012-7
	CRB SD 1999-2009 (Phase II)

VOLUME I

Monday,
April 13, 2015
Room LM-408
Madison Building
Library of Congress
101 Independence Avenue, S.E.
Washington, D.C.

The above-entitled matter came on for hearing, pursuant to notice, at 9:38 a.m.

BEFORE:

THE HONORABLE SUZANNE M. BARNETT
THE HONORABLE JESSE FEDER
THE HONORABLE DAVID R. STRICKLER,
Copyright Royalty Judges

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EXHIBITS

subject to our motions. I think everyone is going to be saying the same thing. I expect the others will be, too.

JUDGE BARNETT: Okay.

MR. MacLEAN: No objection.

JUDGE BARNETT: So, subject to pending motions, Exhibits 362-365 inclusive, and 368-372 inclusive are admitted.

(Whereupon, the above-referred to documents, previously marked as MPAA Exhibits 362-365 inclusive, and 368-372 inclusive, were received in evidence.)

MS. PLOVNICK: Thank you, Your Honor.

JUDGE BARNETT: Thank you.

MS. PLOVNICK: Now, I'm going to give the podium over to my colleague, Mr. Olaniran.

JUDGE BARNETT: Okay.

MR. OLANIRAN: Good morning, Your Honors. MPAA calls Dr. Jeffrey Gray.

WHEREUPON,

JEFFREY S. GRAY

was called as a witness and, after having been first duly sworn, was examined and testified as follows:

JUDGE BARNETT: Please be seated.

MR. OLANIRAN: May I approach the witness, Your Honor?

JUDGE BARNETT: You may. And while you're approaching, we'll ask him to state his name, spell your last name for the record, please.

THE WITNESS: Jeffrey Gray, G-R-A-Y.

MR. OLANIRAN: I think as Your Honors are aware, the parties have an understanding that we would streamline the direct examination of the witnesses who have already provided written testimony, so unless you direct otherwise, I intend to streamline, at least as much as possible, Dr. Gray's testimony.

JUDGE BARNETT: Otherwise, I don't think we're going to get through by Friday, so please proceed.

MR. OLANIRAN: Thank you.

DIRECT EXAMINATION

BY MR. OLANIRAN:

Q Dr. Gray, would you please summarize your background, including your educational background, recent employment history, and your occupation and subject matter of your specialty?

A Yes, I'm currently the President of Analytics Research Group, LLC, often referred to as ARG, which I founded in 2013. Immediately prior to that, I was a principal at Deloitte Financial Advisory Services, LLP, also the National Director of their Economic Statistical Consulting Practice.

I have Ph.D. in Economics from the University of Pennsylvania, a BA also in Economics from the University of California at Santa Cruz. In terms of my occupation, I am an economist and a statistician. These past couple of decades, the vast majority of my work experience has been in performing economic and statistical studies primarily involving large-

scale data analytics for companies, government agencies, and the legal community.

Q Thank you. And have you previously testified before this body as an expert in your area of specialty?

A I've had the pleasure of testifying before this body as -- in, what was that, 2013, as part of the '00-'03 cable Phase 2 proceeding.

MR. OLANIRAN: Your Honor, I now offer Dr. Gray as an expert in the field or economics, statistics, and econometrics.

MR. BOYDSTON: No objection.

MR. MacLEAN: No objection.

JUDGE BARNETT: Dr. Gray is so qualified.

MR. OLANIRAN: Thank you.

BY MR. OLANIRAN:

Q Dr. Gray, what were you asked to do in this proceeding?

A I was asked to propose a methodology and allocation of royalties for the '00 to '09 satellite royalty funds, and the '04 to '09 cable

royalty funds attributable to the program suppliers category between IPG and MPAA.

Q Thank you. And did you prepare written reports of your findings?

A Yes, I did.

Q Dr. Gray, you have a binder before you containing MPAA's premarked exhibits. Would you please turn to the document marked as Exhibit 366?

A Yes.

Q And could you please identify that document for the record?

A That's the amended testimony of Jeffrey S. Gray, Ph.D., amended July 8th, 2014. It's in the matter of the distribution of the '04 to '09 cable royalty funds.

Q And would you please turn to the document premarked as MPAA Exhibit 367?

A That's the testimony of Jeffrey S. Gray, Ph.D., amended July 8th, 2014, corrected July 24th, 2014. It's in the matter of the distribution of the 1999 to 2009 satellite

royalty funds.

Q Okay. And did you prepare Exhibits 366 and 367 by yourself?

A The vast majority I prepared by myself, some of the tables or appendices were prepared by people under my direct supervision. The underlying analysis, I should say, was either performed directly by myself or my team under my direct supervision.

Q And do you have any corrections or additions to either one of these exhibits?

A I do to the amended and corrected testimony on satellite.

Q That would be Exhibit 367?

A That's correct, sir. These two corrections you'll see reveal that there is a bit of framing done between the cable and the satellite testimony at the time. On page 6, paragraph 6, the first sentence says, "Based on the assumptions in number 3 above," and it actually should say "in number 5 above," because it refers to the assumptions regarding my

treatment of contested titles. In my cable testimony, number 3 was correct.

The second correction is on page 11 where I'm discussing the history of the satellite royalty funds, and that I -- regarding the litigation, and I make a footnote regarding the cable satellite funds. We can just strike that. That relates just to the cable royalty funds.

Q Which footnote number is that?

A I apologize. It's footnote 9 on page 11.

Q Strike the entire thing?

A Strike the entire thing in so far as it's irrelevant to this particular testimony.

Q And are those the only corrections you have?

A Those are the only corrections I have.

Q Okay, thank you. And with those corrections, do you declare MPAA Exhibits 366 and 367 to be true and correct?

A Yes, I do, to the best of my ability and knowledge.

MR. OLANIRAN: Your Honor, I move for admission of MPAA Exhibits 366 and 367.

MR. BOYDSTON: No objections other than our motions.

MR. MacLEAN: No objection.

JUDGE BARNETT: 366 and 367 are admitted, and all of the admissions throughout this week will be subject to pending motions, and our ruling thereon.

(Whereupon, the above-referred to documents, previously marked as MPAA Exhibit 366, and MPAA Exhibit 367, were received in evidence.)

BY MR. OLANIRAN:

Q Dr. Gray, you stated earlier that you were asked to propose a methodology for allocating cable and satellite royalties within the -- between MPAA and IPG. And what was the economic basis or standard that you applied in doing so?

A Broadly speaking, the relative market value of the programming.

Q And how did you apply that standard to your work?

A Well, I considered economic theory and then I came to the conclusion based upon the context of this matter being a Phase 2 proceeding with relatively homogenous goods, and the argument is laid out more in my direct testimony, that program viewing is a very reasonable measure for the market value.

Q Okay. And would you describe just generally what steps you undertook with respect to calculating the allocation shares between MPAA and IPG using the viewership basis?

A Sure. Again, in so far as program viewership as a reasonable measure of a relative market value, my goal was to estimate total MPAA compensable viewership, and total viewership for IPG compensable programming. However, the only viewing data that's available for distantly retransmitted stations is for the years '00 to

'03, and for satellite for the first part of 2004, so it was necessary to estimate distant viewing for all the royalty years for cable and satellite.

I did this via a regression analysis separately for cable and satellite, and the result was to obtain estimates of distant viewing for every single program on a quarter-hour basis, 24 hours a day, seven days a week, 12 months a year for every single cable royalty year. The difference between the two for cable, I did it with program supplier data and at the end just calculated MPAA viewership, and IPG viewership, calculated relative shares, and that was also on an annual basis the royalty share.

For satellite, I actually had more data. I had all programming from program suppliers and non-program supplies. I performed the same analysis, at the end had on a quarter-hour basis viewing for every single program. By doing then for each year, I just summed up total MPAA compensable programming, total IPG

compensable programming, calculated the relative viewing shares which I in turn argue are the relative royalty shares for each satellite royalty year.

Q You mentioned your regression analysis a moment ago, and what were the variables that you used in your regression analysis?

A Yes. So, again, the intent was to predict distant viewing on a quarter-hour basis, so what I have from '00 to '03 for a -- we can talk about the sample later, is I know for a handful of programs and stations, quarter-hour distant viewing. And for each of those, I have on a quarter-hour basis a host of factors concerning that broadcast. I know the local ratings at that quarter-hour. I know the total number of subscribers who are able to see the station distantly that it was aired on. And I know, gosh, the program type, et cetera, so I calculated mathematical relationship between these host of factors that are laid out in my testimony and the level of viewing. And through that calculation, I

then calculate for every single quarter-hour for every royalty year what distant viewing might be.

Q And do you describe your work in more detail in your testimonies?

A Much more detail. I didn't go at length now. I was instructed to be brief.

Q Okay. And where are the results of your allocation and methodology reflected in your testimonies, just for the record?

A The results would be in the conclusion, so now in Exhibit 367, which is satellite, and that's on page 34. And for cable, which is Exhibit 366, also in the conclusion appears to be Table -- I'm sorry, page 32, Chart 3. But I should say all those royalty shares are updated in my rebuttal testimony.

MR. OLANIRAN: Your Honor, I have no further questions of Dr. Gray at this point.

JUDGE BARNETT: Thank you.

MR. MacLEAN: Good morning, Dr. Gray.

THE WITNESS: Good morning.

MR. MacLEAN: I'm Matthew MacLean. I

represent the Settling Devotional Claimants. I just have a very few quick questions here.

CROSS-EXAMINATION

BY MR. MacLEAN:

Q I wanted to ask you, how was your random sample selected?

A The way -- well, there are a couple of random samples, one for satellite, one for cable, but the strategy of each is a stratified random sample proportionate to the number of distant subscribers in each strata.

Q Now, I saw in your rebuttal testimony that Dr. Robinson actually used in the program suppliers category a combination of your stratified random sample, and her stratified random sample?

A In her rebuttal testimony referring to --

Q Your rebuttal testimony.

A Oh, my -- yes, for -- I was commenting on her direct testimony. That's correct, she did.

Q Did you get any -- see any indication

whatsoever of why Dr. Robinson would have used only those stations in her sample that were also in your sample?

A That -- I saw no indication why, nor is that something I would have done, because it leads to a non-random sample.

Q In your stratified random sample, it sounds like you weighted in favor of stations with higher numbers of visits. Correct? Is that right?

A That's a fair assessment, yes.

Q Did you also apply sampling weights to each of the strata?

A Yes, I did.

Q Why did you do that?

A In order to make sure that my final estimates were representative of the population.

Q Could you explain briefly to the Judges what sampling weights are?

A Sure. When you do a stratified -- when you do a non-simple random sample. What a simple random sample is, you know, you put the

proverbial, all the balls in an urn, as we used to teach my kids back in undergraduate statistics, and you pull them out randomly. Then each has an equal probability of being selected, and then that sample is representative of the population as a whole.

What we do here with the stratified random sample, if you think about having multiple urns. And in the first urn I might pick out 90 percent of the balls, in the last urn I might pick out only a few balls. The problem now is these balls that you pick out are not necessarily representative - I hope this makes sense - of all those -- all the populations. And what you need to do is say okay, these balls I picked out of this urn on the far right here that were unlikely to be selected, I need to increase sort of the significance of -- increase the weight of how much attention I give them, because they need to reflect that entire urn. So, if I've got a couple of balls out of here, that's actually reflective of a lot more. And if I don't do that, then my

final estimate really has no bearing on my collection of urns. I hope that made sense. Any follow-up questions, if I can help to clarify?

But the bottom line to your question is, if you don't do those weights, then your final estimate will not be representative of the population.

Q Would you say that that's a very advanced sampling technique that you're talking about, or is this something that -- when in statistics school would you learn something like that?

A My daughter just had Statistics 101, and she's a freshman, and I hope she knows it.

Q Now, in your -- in both your direct and your rebuttal testimony you talk about treating WGNA differently, separately from non-WGNA statements. Is that right?

A That's correct.

Q And why did you treat WGNA differently?

A I treated it differently because for

lack of a better expression, it's enormous and unusual. There are, you know, 35 million plus subscribers of WGNA, distant subscribers, and the relationship between sort of viewing and ratings for me is different for WGN than the others. So, if I were to run a regression with WGN and the other subscribers, WGN would have too much of an influence on the final estimate results, so --

Q If I could cut in, why do you say "too much of an influence?"

A Well, I'm interested in knowing what the viewing level is for every program on every distantly retransmitted station for all these subscribers. If there is an unusual relationship between viewing and local ratings for WGN and the rest of these stations, what the regression is going to do is it's going to see all these subscribers and sort of give it that type of weight to the final results that might not be intuitive. And, actually, I see when Robinson ran her so-called Robinson-Gray Model for cable, she also did them separately.

Q So, I take it from what you're saying that you found through your regression analysis that WGNA distant viewing is actually lower on average than distant viewing for non-WGNA stations in the program suppliers category?

A More in proportion to the number of distant subscribers, yes.

Q Did you investigate as to why that might be?

A Not to why. I did not survey any of the subscribers to ask why they weren't watching.

Q Is WGNA on average retransmitted to -- in markets that are farther away than non-WGNA stations are?

A That I did not investigate. No, I do not know.

Q Is it fair to say, Dr. Gray, that you treated WGNA's distant viewing data then as an outlier?

A Yes, I did.

Q Okay. I think you said intuitively, you decided to treat it as a outlier. Okay,

statistically it seems like an outlier, but why intuitively did you not think it was important enough to be contained within your analysis, and instead to be treated as an outlier?

A Well, mathematically it's an outlier. One could do what's called an F-Test to test to see whether or not it's similar to the rest of the stations, and it's not. And as you look at the regression results, the set ones for WGN and non-WGNA, you'll see different coefficients, which underlies why the so-called F-Tests suggest they should be separate.

In terms of the intuition, I did these fractions about a year ago, but if you look at the relationship between -- I cannot recall them, it was a year ago, but between viewing and the number of subscribers, it's an order of magnitude different from WGN and WGA than the rest of the stations. So, there's -- I don't recall, but the -- yes, I could have it for you later today, but it's -- again, so the relationship between viewership and subscribers, it's very small for

WGNA compared to the rest of the stations.

Q Now, is that partly because WGNA is retransmitted in more distant markets than other stations are?

A Ultimately, it's because people are not watching WGNA in the same proportion as others. I can't tell you why that's --

Q I should have been more clear in my question. I mean, when you say that there are, I believe your words, enormously more subscribers for WGNA, is that because WGNA is retransmitted in more distant markets than other stations?

A Yes, I'm sorry. And there's a table in my reports concerning the number of subscribers of WGN, and it just -- it pops off the charts, ultimately.

Q Being retransmitted in more distant markets, would you then expect, for example, more geographic and demographic diversity amongst the distant viewers of WGNA?

A That's a reasonable expectation. Of course, I would want to check that if it were

important to my analysis.

Q If there might be more time zone shifts for WGNA viewing, the programming than for other stations?

A I would expect that on average, yes.

Q There might be more overlap with programming on different stations because it's going to more different markets where more different -- more of the same programs might be on different stations. Right?

MR. BOYDSTON: I'll object. I think it's going beyond the scope of his expertise, which is statistical base, and now Mr. MacLean is asking him questions about programming questions about different parts of the country, and overlapping programs, which I think goes beyond his expertise.

MR. MacLEAN: It certainly goes to the intuitive factors that would cause WGNA viewing to be different, distant viewing to be different on average than other stations.

JUDGE BARNETT: And I'd also add this

is beyond the scope of his direct.

JUDGE BARNETT: Sustained. Sustained.

BY MR. MacLEAN:

Q WGNA, like other stations might be known for particular types of conduct, of content. Right?

A It appears to be, actually just the level of program supplier content on WGNA actually decreased dramatically over the royalty years.

Q Did you ever think about doing a regression of WGN based on scores in Cubs games?

A I have not.

JUDGE STRICKLER: What was the first team you mentioned? You said -- I heard Cubs.

MR. MacLEAN: The scores in.

JUDGE STRICKLER: Scores in.

BY MR. MacLEAN:

Q Well, that was a good question. Those games?

A I have not done them, either.

Q So, Dr. Gray, I'd like to refer you to

a paragraph in your rebuttal statement at page 3. And I can just read it if you'd like.

A Is this in front of me?

Q It should be there in the exhibit binder.

MR. OLANIRAN: It's in the binder but it hasn't been admitted. You can give it to me, I wish I can help you.

MR. MacLEAN: I think it will --

BY MR. MacLEAN:

Q Okay. So, paragraph 4 of page 3 of your rebuttal statement you say -- you're directly addressing our expert witness, Dr. Erkan Erdem's methodology. And you say that, "Dr. Erdem's methodology is based on the actual viewing patterns of programming, and as such is consistent with the methodology I proposed in the Gray direct testimony. As described later in my testimony, because my methodology is applied to a more complete data, it is my opinion that my proposed methodology provides a better approach to allocate royalty shares in the program

suppliers category." Do you remember writing that?

A I do.

Q Now, I notice that you limit this comment specifically to in the program suppliers category. Is that right?

A That's correct.

Q You don't opine one way or the other on whether Dr. Erdem's methodology is adequate or appropriate for the devotional category.

A I do not.

Q Now, there are important differences with respect to this between the program suppliers category and the devotional category. Right?

A I would think so. I have not studied the differences at length.

Q So, for one thing, for the program suppliers category, both MPAA and IPG have claimed vastly more programs in the program suppliers category than any party who claimed in the devotional category. Is that right?

MR. BOYDSTON: Objection, Your Honor. He just said in answer to the previous question that he hasn't looked at the devotional category at length.

MR. MacLEAN: I believe he said he hasn't looked at it in depth.

THE WITNESS: It's certainly the case that --

JUDGE BARNETT: Overruled.

THE WITNESS: I'm sorry. It's certainly the case that the titles and volume claimed in the program suppliers category is far greater than that in the devotional category.

BY MR. MacLEAN:

Q And the sheer number of different programs claimed by the parties in the program suppliers category is actually a factor that would improve the overall accuracy of a sample-based methodology like your's. Is that right?

A That's correct. Yes.

Q And that's because the aggregation of a greater number of observations generally

reduces standard error. Is that right?

A Well said.

Q Did you know that Dr. Robinson said the opposite in the 1999 proceedings?

A I did not know that.

Q Does that surprise you?

A I do not know Dr. Robinson.

Q Now, you rely on a sample of stations. I think we already discussed, random samples. Right?

A Yes.

Q Actually, several random samples.

A Correct.

Q You don't look at every single station. Right?

A I would love to. That's cost-prohibitive, and time-prohibitive.

Q Right. Now, Dr. Erdem, on the other hand, has national viewing data for devotional programs on all stations in Nielsen market. Is that right?

A Yes, based upon my read of his direct

testimony.

Q It wasn't based on a sample.

A That's right.

Q Now, your Model 2 in your testimony, that was the one you're talking about. Right?

A I did that.

Q Okay. Your Model 2 relies on data only from Nielsen metered markets. Is that right?

A That's correct.

Q And Nielsen metered markets are a non-random minority of all Nielsen markets. Is that right?

A It's non-random sample. I don't recall if it's minority. I think it's a majority with respect to viewing, but I would have to double check.

Q It actually varies from year to year, doesn't it, how many meters?

A That it does.

Q Generally more meters in later years, fewer meters in earlier years.

A Right.

Q Now, sweep data on the other hand is based on diaries in sweep months in all Nielsen markets. Is that right?

A Yes.

Q There are far fewer meters out there than there are diaries during sweep months. Is that right?

A Historically, that's true.

Q Has that changed recently?

A I'd prefer that Mr. Lindstrom speak to that.

Q Okay. And within those years at issue in this proceeding. Is that right?

A That's my understanding.

Q So, as a general matter, you could say meter data tends to be more up to date, but diary covers more. Is that right?

A It covers more? Maybe you could explain you mean "more," which --

Q Well, covers more geographically.

A Geographic territories, yes.

Q Covers, also, more samples.

A Correct.
Q Now, Dr. Erdem relies on Nielsen reports based on nationwide sweep data. Correct?
A That's my understanding, yes.
Q Your methodology relies on projections based on HHVH distant viewing from 2000-2003. Is that right?
A It relies upon sort of the -- well, I calculate, I should say, the relationship between distant viewing in those markets and local ratings, and then use the calculated relationship for more markets depending upon the model.
Q But the particular relationship is what you're basing your -- is what your regression analysis looks for. Is that right?
A Correct. The relationship, for example, between distant viewing and local ratings.
Q To get that relationship you actually need to have that HH -- that distant HHVH viewing data. Is that right?
A Well, I have to have the distant data.

I also have to have the local rating data. Yes.
Q Now, that HHVH distant data itself is actually based on a non-random selection of stations selected by Marsha Kessler at MPAA. Is that right?
A Correct.
Q Dr. Erdem, on the other hand, does not rely on projections based on distant HHVH data. Is that right?
A That's correct.
Q And Dr. Erdem does not rely on any sample that was selected by the Settling Devotional Claimants. Is that right?
A That's correct. That's my understanding.
MR. MacLEAN: Thank you. No further questions.
JUDGE BARNETT: Mr. Boydston.
MR. BOYDSTON: Thank you, Your Honor. Your Honor, may I approach the witness with regard to this?
JUDGE BARNETT: You need to use the

Court's copies.
MR. BOYDSTON: Oh, I'm sorry. Good morning, Dr. Gray. I am Brian Boydston, counsel for Independent Producers Group.
THE WITNESS: Good morning.
CROSS-EXAMINATION
BY MR. BOYDSTON:
Q Now, you rely on, I think it may have been said, certainly I think it was said in your written statement, but you rely on significantly the same data that you relied upon in the 2000-2003 cable proceeding. Correct?
A With respect to the calculation of the royalty relative -- I'm sorry, the cable relative viewing, yes.
Q And in the 2000-2003 proceeding, do you recall producing electronic files that were underpinning your analysis?
A I'm sorry. Could you repeat the question?
Q Sure. In that proceeding, the 2000-2003 proceeding, do you recall producing the

electronic files that were generated in the process of you work in that proceeding?
A I don't recall the details of the production. I produced some files and produced a description of the analysis, yes.
Q Okay. And I believe you -- there's a file, and I don't know if you'll remember file names, but there was a file, a significant file entitled, "Statistics Log." Do you recall that?
A It's a fairly generic title, but I don't recall it exactly now, no.
Q Okay. Do you recall that you testified that you had produced all the underlying files in the 2000-2003 proceeding?
A I believe my testimony was I produced all the sort of files, the description necessary so that the results could be sufficiently replicated to test my findings.
Q Do you recall, though, that you did not produce a file entitled, "Final DOT Set," in the 2000-2003 proceedings?
A I don't recall.

Q Do you recall there was questions about that?
A I have not reviewed the live testimony, but I -- again, I'll repeat that I produced all the data, and files, and description necessary to replicate the analysis. My opinion remains the same.
Q Okay. In this proceeding do you recall that last summer, in August, do you were called on to produce additional documents in addition to those you had produced at the beginning of this proceeding?
A Yes.
Q And do you recall that included 32 separate programming files called "Do-Files?"
A I don't recall the quantity, but it did result in a lot of files being turned over, yes.
Q And do you recall that those files were not produced in the prior proceeding?
A There were files that were turned over in this proceeding that were not turned over in

the prior proceeding, yes.
Q And so, it would be true, would it not -- excuse me, poorly worded. It is true, is it not, that not all the files produced in this proceeding were produced in the 2000-2003 proceeding?
A That is true.
Q Is there any reason why that was, that you're aware of?
A Well, the discovery in the prior proceeding, I was told to turn over all the files together with a description sufficient so that a competent analyst could replicate my findings sufficiently well to test them. And as I testified in the prior proceeding, actually I did that same exercise in house.
Q Was there any reason not just to produce all the files?
A I -- you know, all these follow the discovery recommendations of counsel. I don't practice law, nor do I intend to.
Q Understood. Did counsel in the 2000-

2003 proceeding tell you not to produce all files, just certain files?
MR. OLANIRAN: Objection, Your Honor.
JUDGE BARNETT: Sustained.
BY MR. BOYDSTON:
Q Have you ever been employed by a cable system operator?
A No.
Q Have you ever been employed by a satellite system operator?
A No. I should say, I've been -- you know, I've been consulted for cable system operators. I've never been employed directly by them.
Q And in what regard have you been retained that you just described?
A Well, I should say I've been retained by outside counsel for cable system operators in dispute, for example, with basic cable channels concerning the content of those channels, and whether or not the contents change over time, and in result what happens to the value of the

programming that's on those channels, because the cable system operators were concerned that the content was changing and viewership was declining.
Q Let's talk about the Nielsen data. Mr. MacLean asked you some questions about the distinction between diary data and meter data.
A Right.
Q And I think we've had testimony in this entire proceedings, but just very quickly can you describe for us your understanding, and I realize you don't work for Nielsen, your understanding of what meter diary -- excuse me, meter Nielsen data is, as opposed to Nielsen diary data?
MR. OLANIRAN: Objection, Your Honor. It's outside the scope of his own testimony.
JUDGE BARNETT: I'm going to allow it. It was inquired at some length by Mr. MacLean.
THE WITNESS: Well, diary Nielsen data is information that's collected by surveys that are actually mailed out to respondents across the

country. Actually, I've received them myself, historically, and it's based upon -- Nielsen does some sampling. Whereas, the meter data is collected basically electronically by uploads that are attached often to television sets, so it's often -- so, the difference between diary data is that it actually measures what people -- the respondents are watching because they record it into their diary; whereas, the meter data is attached to the television set and uploads information regarding what's on the television at the time. That's it loosely.

Q And using both these mechanisms, Nielsen is not seeking to get either meter information or diary information from all households. Correct?

MR. OLANIRAN: Objection, Your Honor. This is outside the scope of the testimony.

JUDGE BARNETT: Sustained.

BY MR. BOYDSTON:

Q Well, do you -- you use the Nielsen data. Correct?

A I do, yes.

Q Do you have an understanding as to whether the Nielsen data you get reflects every single household, or groups of households?

A It's based upon a sample of households.

Q And it's -- the Nielsen data projects from those samples onto a larger population. Is that your understanding?

A Nielsen uses their data to project, yes.

Q Such that one diary data, or the data from one diary might be projected to as many as something like 5,000, 10,000 households. Is that correct?

A Nielsen has -- I think this is what you're asking, sort of sampling weights for every single diary, as well as with respect to the meters. So, one diary might be representative from a Nielsen perspective of many households.

Q And in your work here you relied on diary data for four sweeps periods, each four-

weeks long for the years 2000-2003. Correct?

A Right. Well, I believe there were six. I think there were four sweeps periods and a couple of mini sweeps periods Nielsen refers to it as.

Q And the meter diary, as opposed to the -- excuse me, the meter data as opposed to the diary data was provided for only specific stations selected by you for the years 2000 and 2009. Correct?

A That's correct. And that information is collected on a 24-hour a day basis, seven days a week, 12 months a year.

Q Are you familiar with the September 2001 order by this body's predecessor regarding the 1997 distribution proceedings?

A Sitting here today, I don't recall the order.

Q Do you recall reading an order from the CARP in which the CARP addressed the issue of zero viewing?

A Oh, I recall that vaguely. Yes.

Q Okay. You said you recall it vaguely. I'll see if you can get a little more specific than that, or not. If you can, great; if you can't, understood. Do you recall that it was found that the aggregate zero viewing in that proceeding equaled 73 percent of all major broadcasts?

A That does not surprise me.

Q So, you think you may have seen that in that -- you may have heard that before?

A Yes. There are similar levels of zero viewing in the data that we're using in this analysis.

Q And do you recall that the incidents of zero viewing, there was a wide range of percentages station by station?

A I would expect there to be.

Q And do you recall if that was the case?

A I do not recall. Again, I would expect it to be the case.

Q Do you recall that the decision I'm

referring to directed the MPAA to decrease the incidents of zero viewing in future methodologies it presented?

A I do not recall that. I would think they would direct that not towards MPAA, but towards Nielsen.

Q Do you recall whether or not you've ever been instructed in your methodology to attempt to decrease the incidents of zero viewing?

A Let's be clear what zero viewing is. And zero viewing is Nielsen's survey of the number of people in their sample who are not watching television. So, for me to change zero viewing, I suppose the only way to do that would be to have a larger sample, but it's not necessary from Nielsen's perspective, or my perspective. Zero viewing I view as very useful data, and we can talk about that, as well.

Q So -- well, actually, it sounds to me like what you may be saying is decreasing the amount of zero viewing is in the Nielsen is

something for Nielsen to address, if it's going to be addressed at all. Not something for you to address, because you're simply taking what Nielsen gives you, and using it. Correct?

A Well, but I would add to that, which is, you know --

Q Just before you add to it, is that correct? And then add to it, if you would.

A Well, repeat the question because ----

Q Sure. Yes.

A -- it does need context.

Q Sure. You don't go out and survey people, you don't go out and create Nielsen data. You use what you get from Nielsen. Correct.

A Right. And --

Q So, if it comes to you with zero viewing issues, it's not something you can correct. It's something Nielsen could correct before he gave it to you. Correct?

A Well, I think -- actually, I did -- it depends what you mean, because I did correct it in a sense, in that I calculated distant viewing

for every single program for every quarter-hour. And this is actually -- Dr. Robinson can check. After I performed a regression analysis, zero viewing is less than 1 percent, so I would say, you know, from your perspective, I did correct zero viewing. And, again, it's not a question, it's a use of very useful data where we have hundreds of thousands of observations of positive viewing, and hundreds of thousands of observations of zero viewing. You use that information together to predict -- you know, make reliable predictions concerning the level of viewing on a quarter-hour basis for each program. And after doing that, performing a sort of sound econometric analysis, you'll find very low levels of predicted viewing -- very low levels of zero predicted viewing.

JUDGE STRICKLER: Dr. Gray, a question for you, if I may --

THE WITNESS: Yes?

JUDGE STRICKLER: -- interject, counsel. When you get any particular sampling

point out of the Nielsen data, it then gets projected, as you say, as far as you understand by Nielsen, but the actual projection itself will have some margin of error to it, some sort of confidence interval. It's not automatically correct, it's correct to some level of statistical significance. Correct?

THE WITNESS: That's correct, yes.

JUDGE STRICKLER: Okay. So, if it's a positive number, it's plus or minus a certain amount depending on the sampling out of a total population. When you have a zero by contrast, is there a difference there in that the error, the statistical error that will exist as it relates to the zero viewing point, it can't be negative because --

THE WITNESS: Right.

JUDGE STRICKLER: -- you can't have people not -- you know, you just can't have negative viewing.

THE WITNESS: Right.

JUDGE STRICKLER: So, it's either zero

or something positive, so your error, your range, if you will, is zero to some positive number.

THE WITNESS: Correct.

JUDGE STRICKLER: So, the zeroes actually reflect either zero or some positive number; whereas, your positive point estimates actually represent a range of positive viewing, maybe zero to positive, but positive to positive. How does that factor compromise, if at all, an analysis that includes zero viewing?

THE WITNESS: I don't think it compromises it at all. It's a common occurrence. One does have to employ a projection analysis, a regression analysis that takes into account sort of the extent of zero viewing, and that's why you can't do a normal linear regression.

JUDGE STRICKLER: Which regression do you do?

THE WITNESS: I do the plus on regression.

JUDGE STRICKLER: And that accounts for the zeroes?

THE WITNESS: And that accounts for the zeroes. And the plus on regression is used to -- many things. It's to measure things like the number of earthquakes over a handful of months or years, number of car accidents, and things that occur in counts and often -- that don't happen very often. The number of heart attacks -- not to equate distant viewing with heart attacks, earthquakes, or car accidents, but this is a commonly used statistical tool to address zeroes, as well as counts.

JUDGE STRICKLER: So, your entire regression analysis was a plus on regression?

THE WITNESS: Yes.

JUDGE STRICKLER: Thank you. I'm sorry.

BY MR. BOYDSTON:

Q You have -- well, strike that.

In the 2001 decision on the '97 proceeding, I'll read you a quote from that decision. It says, "In the future, if MPAA continues to represent" -- excuse me -- "continues to present a Nielsen-based

methodology, it needs to present convincing evidence backed by testimony of a statistical expert that demonstrates the causes for the large amounts of zero viewing."

Have you done any study or any analysis to determine the causes of the zero viewing incidents?

A I've not studied it, but intuition suggests there's a lot of the zero viewing because distant viewing is uncommon.

Q But you've never done any formal analysis of it.

A No, I've had discussions with people at Nielsen, and their opinions reflect my intuition.

Q Okay. The decision goes on to say, "And explains in detail the effect of zero viewing on the reliability of the results of the survey."

Have you done any formal analysis as to in detail the effect of zero viewing on the reliability of the Nielsen survey?

A Well, in terms of the reliability of my projections, yes. And that's what I was just discussing with Judge Strickler, is I used econometric methodology that used Nielsen's data. Again, which in cable I think was 1.6 million observations, in satellite approximately 1.8 million observation of quarter-hours. I mean, this is a tremendous amount of data with a tremendous amount of information of both positive viewing and zero viewing. And I used the zero viewing information together with the positive viewing information and calculated expected viewing for every single program in a statistically valid manner.

Q And is that analysis present in your testimony, your written testimony?

A Yes. That's the analysis that leads to my viewing shares and my recommended royalty share allocation.

Q I think I understand. Are you aware that the incidents of zero viewing has changed between '97 and 2000-2003 in the Nielsen data,

that is?
A I do not have data with respect to all those years. The diary data that I've only been able to receive is from 2000 to 2003. And, again, the early part of 2004 for satellite.
Q So, you're not aware that the 2000-2003 zero viewing incidents is higher than that in 1997?
A I don't have information on that.
Q Are you familiar with the explanations that Paul Lindstrom provided in previous proceedings to the zero viewing incidents?
A I've had many discussions with Mr. Lindstrom. I don't recall exactly what testimony you're referring to.
Q I'd be happy to refresh your recollection. Mr. Lindstrom was asked about the causes of zero viewing, and one explanation he gave was the difference between WGN and WGNA compensable programming. Have you discussed that with him?
A I don't recall discussing this index

issue with him, no.
Q On your own, can you see any explanation in that regard?
A So, you're referring to zero viewing for compensable WGN programming?
Q Well, the question that was put to Mr. Lindstrom was can you explain why there is this incidents -- excuse me. What is the cause of the level of zero viewing that we see? And one of his explanations was it is a consequence of the difference between compensable programming at WGN versus compensable programming at WGNA. And do you understand what he means by that?
MR. OLANIRAN: Objection; asked and answered.
MR. BOYDSTON: Well, I think the answer was he didn't -- I think we didn't get a yes or no.
JUDGE BARNETT: I don't think it's asked or answered, but -- I don't think it's been answered, but the -- my question is why are you asking this witness about what Mr. Lindstrom

might or might not say?
MR. BOYDSTON: No, I'm asking him what he thinks -- if he thinks that's a valid answer or not. If he in his own work has seen reason why the difference between the programming between WGN and WGNA would explain the causes of zero viewing.
JUDGE BARNETT: Okay. He already said that his feelings about this were based on intuition and conversations with someone at Nielsen. So --
MR. BOYDSTON: Well, that was a previous subject, Your Honor. With respect, that was about a different question. This is about whether or not this particular difference between WGN and WGNA explains or does not explain the incidents of zero viewing.
JUDGE BARNETT: Can you answer the question, Dr. Gray?
THE WITNESS: Well, I don't -- you know, sitting here today, I don't see how that would explain zero viewing. I think what explains

zero viewing is -- I mean, let's use common sense. It's the amount of zero viewing that takes place coupled with the size of the sample.
BY MR. BOYDSTON:
Q And are you familiar with -- or do you understand that in 2000-2003, WGN had tens of millions of distant subscribers?
A Yes.
Q And are you also familiar with the fact that there was between 61 and 66 percent zero viewing rates for the years 2000-2003 according to Nielsen data for WGN?
A That's correct.
Q And is it accurate that only 10 to 15 percent of WGN broadcasts are distantly retransmitted on WGNA?
A Simultaneously, correct.
Q Correct. Correct. Now, does that not mean that zero viewing for WGN would have to be no less than 85 percent for WGN if, as Mr. Lindstrom says, zero viewing attributable to the WGN and WGNA disparity?

A I'm sorry. I'm just not quite following you.

Q Okay. To the extent that we have zero viewing for WGN, and only 10-15 percent of WGN's material simultaneously rebroadcast on WGNA, if, as Mr. Lindstrom said, zero viewing was related to that fact, does that make any sense to you?

MR. OLANIRAN: Objection. Your Honor, this hypothetical is both improper and impingeable.

JUDGE BARNETT: Okay.

MR. BOYDSTON: I'll withdraw it. I think it may be --

JUDGE BARNETT: Thank you. The objection is sustained. And we're going to take our 15-minute recess at this point.

(Whereupon, the above-entitled matter went off the record at 11:00 a.m., and resumed at 11:18 a.m.)

JUDGE BARNETT: Mr. Boydston.

MR. BOYDSTON: Thank you, Your Honor.

BY MR. BOYDSTON:

Q Dr. Gray, I want to go back to a point and ask you to take a look at your reports, your testimony. And, specifically, this goes back to this quotation I read you from the September 2001 order on the '97 proceedings. Specifically, the directive that there be an explanation as to the "in detail, the effect of zero viewing on the reliability of the results of the survey." And I asked you about that, and you said yes, I have addressed -- I said, "Do you address that in your testimony?" And you said, "Yes, I did." You know, you look a little confused. Shall I read the whole quote again to put it in context, or do you have it in your head?

MR. MacLEAN: Could I have a page number?

MR. BOYDSTON: Yes, this is from the Federal Register, and I'll give it to you in just a second.

BY MR. BOYDSTON:

Q Would you like me to read it back, Dr. Gray, or does it --

A Proceed.

MR. BOYDSTON: Okay. Well, the page number is 66 Federal Register, 66-450.

JUDGE STRICKLER: Which proceeding is this? Don't give me the full docket number.

MR. BOYDSTON: I'll start all over so we have one complete --

JUDGE STRICKLER: Phase 1 or Phase 2 proceeding?

MR. BOYDSTON: It was Phase 2. It was the September 2001, Phase 2 order on the 1997 proceedings. And it was -- this quote was at 66 Fed Reg 66-450. And just to put it in everyone's mind, this was the full quote.

"In the future, if MPAA continues to present Nielsen-based viewer methodology, it needs to present convincing evidence backed by testimony of a statistical expert that demonstrates the causes for the large amounts of zero viewing, and" -- and this is the part I'm focusing on, "explains in detail the effect of zero viewing on the reliability of the results of

the survey."

And my question was, did you in your testimony address the effect of zero viewing on the reliability of the survey?

A I would say that my analysis addresses zero viewing. I don't describe it in my written testimony. I can describe it in more detail in more oral testimony now, if you'd like.

Q Okay. But it's not -- so, there's not someplace you can direct us to in your written testimony?

A No, it would be in the underlying documents provided in discovery.

Q Okay. Now, is there an effect, in your opinion, of zero viewing on the relative error rates for the Nielsen survey? In other words, does the incidents of zero viewing have an effect on relative error rates of the Nielsen survey?

MR. OLANIRAN: Objection, Your Honor. I don't think this witness is qualified to answer that question. Again, Mr. Boydston is attempting to get testimony about Nielsen data from Dr.

Gray. In fact, those questions are better directed to Mr. Lindstrom.

JUDGE BARNETT: Overruled.

THE WITNESS: I would say that -- and Paul Lindstrom discussed this in his -- in the '00 to '03 testimony, not just the instances of zero viewing, but just the sheer sample size leads to appreciable standard errors associated with Nielsen's measurement of programming at the individual -- I should say viewing at the individual programming level.

BY MR. BOYDSTON:

Q Okay. Now, do you understand that Mr. Lindstrom has statistical expertise such that he can make that observation?

A He has a long history of measuring viewing data.

Q Do you know whether or not he's an expert in statistics?

A I do not believe he has an advanced degree in statistics, but I would have to check his vitae yet, again.

Q All right. Now, we discussed the zero incidents on WGN of 61 to 66 percent. Now, do you accept Mr. Lindstrom's explanation, and this was his second explanation, that there is such low viewing of WGN that in 61 percent of the time there is no one watching WGN anywhere in the United States outside of Chicago? Does that -- do you agree with that?

A The way I was taught, the data is the data, so I guess the Nielsen data would suggest that for those simultaneously, you know, retransmitted programs, and maybe that's what he meant by the -- that's what explains it. It's not just WGN per se, it's program supplier simultaneously retransmitted. I would look at the data to see how much viewing there is of those programs.

Q And as you discussed, I mean, WGN has millions of subscribers who get its programming. Correct?

A That's correct.

Q Tens of millions.

A That's correct. And, again, you're talking about viewing on an individual program basis. That's why it's important if you're interested in actual distant viewing, even on WGN, you should use all the information collectively to estimate distant viewing on a program by program basis. So, I would suspect ---- I have not checked, I would suspect that the incidents of zero viewing in my predictions of distant viewing is zero, if not close to zero, for WGN programs.

Q And do you disagree that the 2000-2003 Nielsen diary data aggregates zero viewing at 75, 85 percent respectively?

A I'm not disagreeing with the data. I used the data to make regression analyses, and I'm telling you incidents of zero viewing in my ultimate estimation of distant viewing, I'm sorry, my estimates of zero viewing in my final estimates is close to zero.

Q And that incidents, that very, very high percentage incidents of zero viewing doesn't

trouble you in terms of the overall reliability of the data you're using?

A Not at all, no.

Q Not at all?

A No.

Q Thank you. Do you -- are you aware that the range of zero viewing for stations in the Nielsen data range from zero to 100 percent depending on the station?

A Yes. There are some stations that are retransmitted to CSOs or SSOs with very few subscribers.

Q And it doesn't trouble you that there's that range?

A It does not. You know, the data in its totality, again I'll repeat, there is hundreds of thousands of observations of positive viewing from which one can make reliable estimates of distant viewing on a program by program basis.

Q You referred earlier to the data underlying your written report as addressing the zero viewing issue. Do you recall that a few

minutes ago?
A Not so much the data, but the techniques.
Q Okay. Is there data in the data you've produced in discovery which indicates the effect of zero viewing?
A I don't quite understand the question.
Q Okay. Previously, we had talked about whether or not you have addressed the impact on the reliability of the Nielsen information of zero viewing. And I believe you said it's not in my direct statement or my other statements, but it's in the support for that. And my question now is where in that support?
A Got you. Where that's going to be, it's going to be actually in the programs, and in the output files that IPG and Dr. Robinson now have. So, what you can do is you can run the programs and save on a program by program basis my predictions for viewing. And what you'll see, I'll give an example. So, in her rebuttal testimony, Dr. Robinson highlights, I think it

was the IPG program of America's Black Forum as having no instance of viewing at any time. If you look at my predictions and you have this, you'll see that I estimated approximately, this is for satellite, 350,000, over 350,000 occurrences of viewing of that program on a quarter-hour basis. So, again, while there might be zero viewing for the Nielsen data, I employ econometric analysis to take that into account and predict actual viewing on a program by program basis at the quarter-hour.
Q So, in essence, you're substituting your projection for the actual data. The actual data says zero for the program you represented, and what you're doing is substituting that zero data with a projection of your own to come up with the figure you said for that program. Right?
A Yes, and that's over the entire '00 to '09 royalty period.
Q Now, there were some stations that showed zero -- 100 percent zero viewing. Correct? And you to drop those from your analysis, I

believe. Correct?
A I do not recall dropping stations from my analysis because of zero viewing.
Q Okay. And I think this is self-evident, but I just want to make sure, you're using more Nielsen data than the 2000-2003 methodology than was used in 1997 MPAA methodology. Right? I assume that's correct, because it's more years.
A I have not reviewed the 1997 -- I recall the 1997 methodology had this interpolations that were done which I do not agree with. But I did not review it in detail.
Q Okay. Do you recall why you didn't agree with it?
A Based on recollection, but as I recall what they did at that time is, they would have viewing levels at one point in time for one month, and then one sweeps month, and then the next sweeps month several months later they would have another viewing levels, and then predict viewing in between for programs that may be

unrelated to these two programs. So, it just did not make econometric sense to do it that way, in my opinion.
Q Do you recall that Mr. Lindstrom has testified in previous proceedings that where Nielsen projects viewing for less than 5,000 viewers, that there's a relative error factor of 89 percent?
MR. MacLEAN: Objection; relevance and improper impeachment, or for whatever he's looking for.
MR. BOYDSTON: Well, the relevance is, is I want to know whether or not he agrees or disagrees that that's a problem given the fact that 95 percent of the Nielsen diary data broadcasts project viewing at less than 5,000 viewers. If that's the case, then that's a --
JUDGE BARNETT: Mr. Boydston, I would suggest then you ask if he agrees with that statement rather than asking him if he recalls that Mr. Nielsen said it.
MR. BOYDSTON: You mean Mr. Lindstrom?

JUDGE BARNETT: Lindstrom, excuse me. I keep calling him Mr. Nielsen.

BY MR. BOYDSTON:

Q Do you disagree with the conclusion of Dr. Robinson that 95 percent of the Nielsen data broadcast projected viewing of less than 5,000 viewers?

A I have not done that count.

Q If that were the case, would that concern you in terms of the reliability of the Nielsen data?

A As I testified earlier this morning, on a program by program basis there might be a significant amount of relative error, but it's important to use this data, you know, apply a sound econometric or statistical methodology to the data to make projections in the aggregate. And, ultimately, what I want to view, I'm sorry, what I want to measure is relative viewing of MPAA programming and IPG programming.

Q Did you calculate relative error rates in this proceeding?

A I did not calculate it at the individual program level.

Q Okay. Do you recall that in the 2000-2003 proceeding, in their order, the Judges stated that without relative error rates, the reliability of any statistical sample, be it Nielsen or anything else, is suspect and cannot be assessed?

A I calculated confidence intervals for the final estimate of royalty shares.

Q Okay. Is that the same thing as relative error rates?

A Not on an individual program by program basis, but it sort of shows a range of reliability of the overall viewing percentage and, therefore, the royalty share percentage.

Q Is it -- I believe that your testimony acknowledges a significant overlap of IPG claimed and MPG claimed titles, individual program titles. Correct?

A MPAA do you mean?

Q IPG claimed and MPAA claimed overlap

of titles.

A There was an overlap, yes.

Q And your calculations considered all those overlapping titles to be accorded to the MPAA. Correct?

A Are you referring to my amended testimony now?

Q Yes.

A Yes, that was my assumption, as I alluded to this morning.

Q Did you run analysis to see what the results would be if all those overlapping programs were all according to IPG?

A I did not.

Q Why is it that you considered that all of the overlapping programs should be valued to the MPAA?

A I wasn't making a value judgment. It's not that they should be, it's that counsel expected that the vast majority, if not all would be, ultimately, given to MPAA, so they saw no reason for me to calculate different scenarios.

Q In other words, you were instructed to make that calculation by counsel. You did not make that decision on your own.

A I did not make a decision regarding any claimant or program claimant, no.

Q Okay. So, I think what you're saying is that you were told calculate this assuming all overlapping titles go to the MPAA. Correct?

A What I was told is here are all the programs that MPAA claims, and we think these claims are legitimate; therefore, award them to MPAA.

Q Okay. And you made no independent investigation as to whether that should be the case, of course?

A I did not investigate the validity of claims, no.

Q Now, I believe you make the statement or conclusion that the total program volume represents the economic optimizing satellite system operator or cable system operator choices and provides a measure, therefore, of the

relative economic value of the different programming choices.

A I hope I didn't phrase it that way, with all due respect. I would have to go back to my exact phraseology, but I do think program volume is -- the way I probably phrased it is a measure, albeit a flawed and incomplete measure, of value programming.

Q Okay. In your written statement, I believe you state that volume alone does not reflect relative economic value. Correct?

A Yes, incomplete.

Q Has anyone -- are you aware of anyone advocating that distributions ought to be made solely on volume?

A I'm not aware of that, no.

Q You, I believe, state that it's your understanding or your belief that viewership of a program by a subscriber is the most important factor to a cable or satellite system operator in terms of them choosing what programs they're going to pay licenses on.

A I didn't phrase it that way, no. I think, you know, if you appeal to economic theory, specifically consumer choice theory, program viewership provides a very good measure for the marginal contribution of programming, perhaps the best one we have where the data is available.

Q Are you aware that there have been previous decisions by the predecessor entity here saying that looking at viewership measures the wrong thing?

MR. OLANIRAN: Objection; lack of foundation, incomplete hypothetical.

MR. BOYDSTON: Well, I'm just asking if he is aware of it as a foundation.

JUDGE BARNETT: Sustained.

MR. BOYDSTON: May I ask him if he's aware of that to lay the foundation?

JUDGE BARNETT: That's the objection I just sustained, Mr. --

MR. BOYDSTON: Okay.

BY MR. BOYDSTON:

Q Turning to the question of Canadian broadcasting, I want to read you a statement in your cable testimony, and then ask you a question about it. You state, "I understand the programming aired on Canadian stations which originated from countries other than the United States are not compensable as program suppliers programs."

(Off microphone comment)

MR. BOYDSTON: Sure. It's the cable amended statement at page 20. I'm sorry. I'll start over again.

BY MR. BOYDSTON:

Q "I understand the programming aired on Canadian stations which originated from countries other than the United States are not compensable as program supplier programs and, therefore, are irrelevant to this proceeding. I use these CRTC program logs to determine country of origin of programs claimed by both IPG and MPAA which aired on Canadian stations." And then after that you reference testimony by Marsha Kessler as your

source for this decision. That's at Footnote 30.

Did you get -- seek any other advice on this issue, or get any other input, or any other guidance as to how to treat Canadian broadcasting?

A No, I have not.

Q Are you familiar with any prior decisions by this body or its predecessors which identify what Canadian programs are compensable and what ones are not?

A I am not aware, no.

Q So, your sole basis for adopting that that was just the Marsha Kessler information.

A Yes. Marsha Kessler, together with discussions with counsel. Ultimately, my understanding is the foundation is from the Kessler testimony.

Q Okay. And you've never been provided with any previous decisions by the CARP or anybody else identifying this issue.

A Not that I recall.

Q Okay.

A I've been provided with a lot, but I don't recall it.
Q I understand. So, you're not aware that Canadian originated broadcasts that are retransmitted but that are owned by Americans are compensable?
A My understanding is they are compensable, yes.
Q And how about Canadian-owned broadcasts from within the United States, do you understand that those are compensable?
A My understanding is those are compensable, yes.
Q And what about --
MR. BOYDSTON: I may be done, Your Honor. Just one more moment.
BY MR. BOYDSTON:
Q You mentioned that data -- Nielsen data for the years beyond 2003 was not available to you. Is that correct?
A Nielsen diary viewing data, that's correct.

Q That's not to say it wasn't available anywhere in the universe, it just wasn't given to you. Correct?
A I did not receive any diary data, correct, other than 2000 to 2003.
Q Okay. Did you ask to be given data beyond 2003?
A Yes. In fact, asked and expected to receive it, but my understanding was Nielsen was unable to obtain it.
Q That MPAA was unable to obtain it?
A Nielsen.
Q That Nielsen was unable to provide information for 2004 on?
A Correct.
Q Did anyone tell you why Nielsen couldn't provide that information?
A They had a change of systems and they were unable to access the information.
JUDGE STRICKLER: How, if at all, do you think that your inability to obtain 2004 through 2009 data impacted you given that you had

to then rely on 2000 to 2003 data?
THE WITNESS: Well, Your Honor, I always prefer to rely on more data, so I actually -- the methodology I used because I was unable to receive '04 to '09 data, my analysis would have been different. I do think -- I still think that this is a reliable methodology given the data that was available.
JUDGE STRICKLER: Do you think it's less reliable given the fact that you didn't have contemporaneous data?
THE WITNESS: Well, I wouldn't phrase it that way. For -- I'm -- I'd prefer to have contemporaneous data. I suppose there's more uncertainty with respect to my estimates. But, as an example, I'll point to my experience with the Canada log files, which I only had for '00 to '03, the time I wrote my amended testimony. So, what I did there is I didn't know for new programs from '04 forward whether or not they were Canadian-originated or not, so I followed the assumption of saying okay, whatever the ratio

that IPG had of broadcast to Canadian stations were the same going forward. And I wasn't sure that was reasonable -- well, I thought it was reasonable, but I wasn't sure how perfect it would be, so that's why actually in January of 2015, my firm obtained all of the logs. I said well, we've got to check, and let's hope we're close. The results were almost identical.
JUDGE STRICKLER: With regard to your reliance on 2000 to 2003 data, the diary data, since you had to, I guess, extrapolate, if you will 2004 to 2009, did you -- similar to what you just talked about with regard to Canadian broadcasts, did you look at the changes in diary data from 2000 to 2001, and then 2001 to 2002, finally 2000 to 2003 to see whether there were any changes from year to year within that group of data that might suggest that it would be reasonable or unreasonable, or somewhere in between, to extrapolate out to 2004 to 2009?
THE WITNESS: I know we did a series of robustness checks with respect to the sample, as

well as respect -- with respect to the years, and I felt comfortable with making projections. But I don't recall sitting here today. I'll go back and double check all of our robustness checks.

JUDGE STRICKLER: Okay. So, your robustness checks may or may not have addressed the -- answered the question that I asked, which was comparing changes intra 2000-2003 with your extrapolations to 2004 through 2009.

THE WITNESS: May or may not have. It's been a long time. I'm going to go double check. I would -- yes, I will go double check. You start getting issues with respect to sample size as you parse it too thinly, but I would expect the results not to change very much, for the following reason. I mean, the intuition behind all of this is the following, is when you have sort of volume share that's, you know, 98, 99 percent depending upon how you define it, and you have IPG programming that tends to occur in the middle of the night relative to MPAA programming, and tends to be sort of very low ratings, you

would expect any methodology that sort of appropriately sort of takes into account viewing would sort of move a percentage from 98-99 closer to 100 percent. So, any kind of -- any sort of -- well, first, anything that's below that doesn't pass for me the straight face test, so I would expect any sort of reasonable project to be in the same ballpark. That's my intuition behind it.

JUDGE STRICKLER: But separate and apart from your intuition, you could actually go back and look at your underlying data, and let me know if that kind of robustness check that I've described was done.

THE WITNESS: I plan on doing it this evening.

JUDGE STRICKLER: Thank you.

THE WITNESS: Thank you.

JUDGE FEDER: Dr. Gray, the questioning from Judge Strickler and the previous questions from Mr. Boydston went to the availability of diary data. Is that correct?

THE WITNESS: That's correct.

JUDGE FEDER: For what years did you have meter data?

THE WITNESS: I have meter data from 2000 through 2009 for the entire population.

JUDGE FEDER: And can you explain the difference between how you've used the diary data in your analysis, and how you used the meter data in your analysis?

THE WITNESS: Very good. So, the meter data is for local ratings, so I have information on local ratings for every single broadcast on the quarter-hour basis for 2000 on 24 hours a day, seven days a week, 12 months a year with no gaps. If there are some handful of missings, we could talk about that and how I dealt with it. And then what I have is diary data, just for '00 to '03 just during sweeps weeks, and for a certain sample. And what I did is perform a regression. The intuition is this, is I compare local ratings on the quarter-hour, and for what I have information on distant viewing, level of distant viewing perform a mathematical

calculation, and what you see, and I think it's intuitive, is the higher local ratings are, the higher distant viewing is. In fact, I think it's on the order of magnitude of 1 percent increase in local ratings on average leads to like a half percent increase in distant viewing. So, I have millions of observations that allow me to make this mathematical formula. So, then what I did was okay, going forward, I know local ratings everywhere. This is sort of a high level of it, and I say okay, if your local ratings is this, and I don't even look at the broadcast. Your local ratings is this, the number of distant subscribers is this, based upon that mathematical formula, your distant viewing is probably this. And I do that for every single quarter-hour from '00 to '09 forward to get my estimate of distant viewing.

JUDGE FEDER: Just to confirm my understanding of your explanation, which may, obviously, be incomplete. In essence, the distant viewing data based on Nielsen diaries is used,

essentially, to determine the mathematical relationship between local and distant viewing?

THE WITNESS: Very well summarized, yes.

JUDGE FEDER: Okay. And then the local viewing data based on the meter Nielsen data is used to project local viewing for all those quarter hours, 24 hours a day, seven days a week, 365 days a year, et cetera. And then that mathematical relationship between local and distant is used to make a prediction as to distant viewing for all of those predictions.

THE WITNESS: That's correct. You start growing around orders of ratings and viewing which -- I would -- if I could edit what you said.

JUDGE FEDER: Please, do.

THE WITNESS: Which is just -- I didn't have local viewing, I had local ratings.

JUDGE FEDER: Right.

THE WITNESS: So, I calculate the relationship between local ratings and distant

viewing. I actually control for the number of distant subscribers, so actually mathematically that's actually lining up local ratings to distant ratings to be mathematically pure. And then once I have that -- so, I want to throw in distant subs there, too. It's important mathematically. But you're right, once I have that for a subset, I use it for everybody. And, actually, once I have the mathematical relationship, I ignore program title as I look at a quarter-hour. Pick any year, any quarter-hour, and I will tell you what the distant viewing is likely to be based on local ratings, the number of subs, the program type, and I'm forgetting a couple. But, yes.

JUDGE FEDER: Okay. And there's one final question, maybe not final, depends on your response. The mathematical relationship that you've mapped out between local and distant viewing, or local ratings and distant viewing, and that's based on data for '00 through '03. Is there -- and perhaps this goes to what Judge

Strickler was asking, is there any reason to expect that that would change over time for the years for which you did not have distant viewing data? And is there -- and what is the basis for that expectation?

THE WITNESS: That's exact -- I believe that's exactly what he's getting at.

JUDGE FEDER: Okay.

THE WITNESS: And my expectation is - well, and by the way, mathematical relationships are presented in appendices to my testimony, so if I actually -- I present the results of the actual mathematical relationship. And, again, it is five -- for cable is this? It's 54 percent, so the question is what I find for '00 to '03, when you have a 1 percent increase in local ratings, you have a .55 percent increase in distant viewing. Do I expect that number to change? I don't see any reason why it would change, but it could be higher or lower. But I also don't expect a priori it to bias MPAA, or bias IPG to advantage or disadvantage. There's no way of

knowing if there is a different relationship.

JUDGE FEDER: Okay, thank you.

BY MR. BOYDSTON:

Q In the analysis you were just talking about between the metered local Nielsen data and the distant data, did you take into consideration or did you take into consideration program type, of was it just all programs across the board you were looking at?

A I adjusted for program type, yes.

Q And in what respect?

A What I did was I included controls for the type of program that it is, and so -- and what I found, for example, is that on average first run syndications tend to have higher viewing, even controlled for local ratings and market size, first run syndications have higher viewing than say health programs. So, the mathematical relationship, it'll calculate sort of what your distant viewing is based upon your local ratings, and number of subscribers, and then if you're also a first run syndication you

get a slight increase. But what's actually driving the results, in the one -- I keep on forgetting to mention, this is an important one. It's one of three drivers, is the number of distant subs. In my appendix I call that market size, the number of distant subscribers by number of consumers going to access to this program, the local ratings, and then the time of day. And I know Robinson uses two of the three, she uses -- with her analysis. She doesn't do a regression, but she does this sort of shift factors, she looks at them separately not simultaneously. It's imperative to compare them simultaneously. She looks at time of day and distant subs. I also looked at the third thing which is critical, obviously, on a program by program basis, sort of the popularity of the show.

Q Were you able in your regression analyses, to back up, in response to Judge Feder's question you said a positive change of 1 percent in local viewing, you have a positive change of .55 percent in distant viewing

according to your regression. Did you do any other regressions mentioning the factors that you just testified to, volume, time of day and the like to see what the relationship was between changes of time of day, or changes in subscribership --

A Yes.

Q -- or anything else on distant viewing?

A Yes. So, if you have my cable testimony, Exhibit 366, if you turn to page 50.

Q Hang on one second, 366?

A Yes.

Q That would be the cable. Okay. I have it.

A Okay. So, this is one regression specification.

Q What page, sir?

A I'm sorry, page 50.

Q Thank you, which is Table D-2-A. It's the appendix Table D-2-A.

A Right.

Q Okay.

A So, this is the Poisson regression result, so it -- and as you see in the title, I refer that's a Poisson. And the .55 I was referring to is the -- these are the coefficients showing the relationship between these characteristics like a lot of the local ratings against distant viewers. That's why the bold up on the column headings says distant viewers. So, the interpretation of this, because a Poisson runs in sort of exponential form, so essentially a log on a log. So, that means a 1 percent increase in local ratings leads to a .55 percent in distant viewing. And the same thing for market size, a 1 percent increase in market size leads to a .76 percent increase in distant viewers. And the time of day is done down there, omitted is midnight, and what you'll see all these negatives reflect the following. Actually, they reflect -- when they're negative it suggests that it's the middle of the night. People aren't watching as much, even controlling for local ratings and

market size. If you start getting to prime time as you flip the pages, they're all positive. A lot of quarter-hours in the days you could say MPZ score, or there's a standard error which is the next one, so it shows the reliability of that, the Z scores common acceptable threshold by a Supreme Court is two to three standard deviations is statistically significant. These show that they're all remarkably statistical significant. Actually, with respect -- with one exception, which is time of day quarter-hour, too. And, again, that's saying that 12:15 to 12:30 a.m. is not very different from 12 to 12:15 a.m.

I'm sorry. So, you see all the others, so forgive me. I can discuss them until the end of the week, if you'd like. And I recall actually in our last proceeding, Judge Strickler, I reported a subset of these coefficients, and you asked to see all of them, so this is a -- to meet your request and demand.

JUDGE STRICKLER: In light of the fact

that the market size relationship to a change in distant viewing is .76 and local ratings is .55, does that mean that market size is a more important driver of value than local ratings?

THE WITNESS: I want to say more important, because the question is how variable then do you have in market size and local ratings? So, if local ratings varies by a lot, then it might actually be a more important driver, for example. If the market size does vary by a lot, it's hard to say which one is more important. As a statistician and econometrician, I'd say they're both very important.

JUDGE STRICKLER: And does your relative market value rely at all on market size to determine market value?

THE WITNESS: Yes. In fact -- yes, my relative market value relies on each of these characteristics, so this is my regression specification. So, my relative market value then therefore relies upon market size which is the number of distant subscribers.

JUDGE STRICKLER: So, your relative -- excuse me. Your relative market value then doesn't rely solely on subscribership or, excuse me, solely on viewership?

THE WITNESS: Well, it -- what it is, is it -- in reduced form it relies on viewership, but viewership is predicted based upon all these characteristics of value. So, I'm predicting viewership based upon market size, ratings, quarter-hour, program type, et cetera. So, therefore, what you can think of as my relative value measure is based on viewership, but viewership is based upon all these factors. That's why as an economist viewership is such a wonderful measure.

JUDGE STRICKLER: So, you've controlled for market size --

THE WITNESS: Yes.

JUDGE STRICKLER: -- to go for viewership. Have you controlled for viewership to check the impact of market size?

THE WITNESS: Yes.

JUDGE STRICKLER: And is that the .76 that we're looking at?

THE WITNESS: No. I think what you're asking is a handful of pages more, page 57. Unless I misheard you. Are you asking the relationship between -- I think you are, between viewership and subscribers?

JUDGE STRICKLER: Yes.

THE WITNESS: Okay, yes. So, that's Table D-3 here. And what I'm looking at here is okay, is what does last year's -- and the problem -- let me do a preface, I should say. Is the number of distant subscribers is just measured, you know, really once or twice a year, so I have to do this on an annual basis. So, what I'm looking at is the -- how does last year's level of viewership affect this year's level of subscribers?

JUDGE STRICKLER: Is it -- you're looking at the level of -- say that again, if you don't mind.

THE WITNESS: Sure. And I do this --

and I know it's -- ask me to repeat it a third time, because I was over the bridge with this. But a -- so it's last year's -- let me put my glasses back on. Level of distant viewership, so the total number of viewers, and this is on a station by station basis. Okay? So, the total number of viewers to a station. How does that relate to this year's number of subscribers of that station? So, what I'm trying to get at is like are CSOs dropping stations, et cetera? So, how does last year's total viewership affect this year's subscribers?

JUDGE STRICKLER: I thought you were going to tell me something the opposite direction. I thought you were going to tell me about -- that you were going to point me to a page that showed me how the level of subscribership affects the level of viewership.

THE WITNESS: I'm -- no, I did not intend that. I'm trying to figure what the purpose of that is. Am I allowed to ask you a question?

JUDGE STRICKLER: Well, no, but okay. Tell me what it's -- so, what you're showing me is that it's last year's level of viewership give you a prediction of the number of subscribers.

THE WITNESS: Correct. But the intent of this is to actually -- I'm getting ahead of myself. Is to see is there something that IPG programming that might affect subscribers differently. So, the next -- so, the other variable is okay, what's last year's sort of the share of programming on these stations that are IPG. And does that sort of contribute in a different way to subscribers in the next year. And I find that there's not a statistical relationship.

JUDGE STRICKLER: Okay, thank you.

JUDGE BARNETT: How close to done are you?

MR. BOYDSTON: I'm pretty close to done. I have one question that might turn into two, but it's really one point.

JUDGE BARNETT: Why don't you finish

then.

MR. BOYDSTON: Thank you, Your Honor.

BY MR. BOYDSTON:

Q With regard to your comparison of the program volume between IPG and MPAA, you testified that wherever there is overlap you've accounted it to MPAA. Correct?

A Wherever there are contested titles, yes.

Q Right. So, in effect, your figures are really only giving value to IPG for programs that have not been claimed in any way, shape, or form by the MPAA. Correct?

A I don't -- what do you mean by "way, shape, and form?"

Q Okay. Skip that part. The only IPG programs that you're giving value to IPG in your calculation are those which the MPAA has made no claim for whatsoever.

A In those years, correct.

Q Right. And in doing that, have you taken into consideration situations in which the

MPAA does not have an agreement with the owner of the program, but an agreement with the middleman?

A No. In fact, I -- but, again, my rebuttal testimony has shares that are calculated based upon the CRJ's order concerning what should happen to contested titles and what titles should move from devotional to program supplier, and so forth.

MR. BOYDSTON: Thank you. I have nothing further, Your Honor.

JUDGE BARNETT: Thank you. We will be at recess until 1:00.

MR. BOYDSTON: Your Honor, could you advise the witness and counsel not to speak during the break?

JUDGE BARNETT: I can. Consider yourselves admonished.

MR. BOYDSTON: Thank you.

(Whereupon, the above-entitled matter went off the record at 12:00 p.m., and resumed at 1:17 p.m.)

JUDGE BARNETT: Mr. Olaniran, you may

call your next witness.

MR. OLANIRAN: Actually, your Honor, I have re-direct.

JUDGE BARNETT: Oh, okay. Dr. Gray? Thank you, Dr. Gray. You will remain under oath.

THE WITNESS: Yes. Thank you.

RE-DIRECT EXAMINATION

BY MR. OLANIRAN:

Q Dr. Gray, I just wanted to go over just one or two points that you -- you covered during your cross-examination, and some of the exchanges that you had with the judges. With respect to the Gray-Kessler group of stations, I just want to make sure that I understand what you did in that -- for those group of stations.

You basically took the stations that Ms. Kessler relied on for getting the 03 Nielsen data set. Is that right?

A That is correct, yes.

Q And then you -- you looked at the overlap between the randomly selected applications that you selected. Is that right?

A That is correct, yes.
Q And then you used the overlap of -- of the stations in Ms. Kessler's sample and your sample essentially to attempt to do -- to determine a correlation between local ratings and distant viewing, correct?
A There was a host of other factors, but yes. Local ratings and market size were the predominately important ones.
Q All right, and for your regression analysis you -- you developed a correlation for efficient for distant -- distant and local -- distant and local ratings, correct?
A I did, yes.
Q And then along -- along with other variables -- variables used to -- other variables in your analysis, you then developed this estimate of viewing for virtually each quarter hour for each -- each year in question?
MR. BOYDSTON: Your Honor, I object. I think it's beyond the scope. I didn't get into this with him.

JUDGE BARNETT: Overruled.
A Yes, I was going to say I thought I covered all this this morning. I suppose I was not clear. But yes, that's what I did.
Q Okay, and I guess my point is when you describe your methodology as viewing, really the end result is an estimation of viewing or there were other variables that you used to accompany -- to determine viewing estimation which is to all the other variable that you talked about.
A Absolutely. That was to Judge Strickler's question. Viewing essentially encompasses by construction ratings, as well as time of day, as well as the number of distance subscribers to that station, as well as the type of program, etcetera.
Q Okay, and are you testifying at all through the proceeding with regard to your use of the Gray-Kessler group of stations and I think your phrase was that your queasiness was quelled with respect to the use of that group of stations. Do you have any queasiness about using

the Gray-Kessler sample of stations this time around?
A There's been no change. No.
Q Now, with regard to zero viewing, do you understand zero viewing to mean that no one is watching or that it is non-recorded viewing because perhaps the viewer may be too low?
A It's certainly not that no one is watching. The way I think of it is I gave an example back in '03, and I didn't want to rehash my testimony because then I gave an example of surveying people to find out if they're left-handed.
If I surveyed perhaps ten people randomly in Washington, D.C. if they're left-handed, I may have zero left-handed people in the survey. That does not mean there's zero left-handed people in Washington, D.C. Perhaps to the WGN example, I could survey ten people in New York City and get no left-handed people. That doesn't give me concern to think that there's no left handed people in New York City.

To the contrary, I fully expect there to be 18 to 20 percent of New Yorkans --
Q New Yorkers.
A Thank you. New Yorkers to be left-handed. In the way -- in the way you sort of determine how many people in New York are left-handed, is you use the data from New York, Washington, D.C., Chicago, throughout the United States. A thousand cities. You'll find even though observationally on the survey nobody in New York is left-handed, my estimate will say there are 17 percent of people in New York left-handed.
Q Well, what does that say about the survey. If your intuition or common sense suggests it's going to be 15 to 20 percent of New Yorkers who are left-handed, and the survey that you take shows no New Yorkers, it doesn't tell you anything really about the New Yorkers. But what does it tell you about the survey?
A If the survey's purpose is to actually calculate the percentage of people in the United

States that are left-handed, the survey is perfect. So, in order to determine the number of people in New York who are left-handed, you have to do an additional step. You have to do a different survey with a different sample. A bigger sample.

Well -- or use the entire United States, and assume there aren't -- there's a group of people that sort of migrate to New York who are left-handed, etcetera. So, you have to make some assumptions.

You could estimate based upon -- for example, you might find in Chicago that the ten people who you survey you find eight who are left-handed. Pretty soon, if you aggregate that up you find the United States 17 percent. Use a regression to estimate how many people in New York, Chicago, etcetera, and I would find 17 percent.

But if you really want to know with precision how many people in New York are left-handed, survey 1,000 people in New York, or

survey the United States and have meaning for you.

Q And would you also -- would you say that to the -- to the extent that the concern was zero viewing -- concern -- and I'm not saying that you think it is, would you say that concern has been alleviated with your use of the regression analysis?

A Let me by crystal clear. I have absolutely zero concern about the instance of zero viewing. And so, to answer your question, yes, it has been alleviated. So far I didn't have any.

Q In your analysis do you also find -- did you find the presence of zero -- zero values to be biased in favor of one group of programs versus another?

A That was actually in Dr. Robinson's report. I looked at it, and in the report I think she finds in the Nielsen data IPG has more instances of zero viewing in the Nielsen data survey data. That actually is consistent with my

intuition because IPG programs tend to be broadcast in the middle of the night with fewer people watching.

So, if you do a survey, you'd expect to have more zero viewers.

Q So, what would you have done in -- in the scenario where a title has zero values in the -- in the Nielsen data? Would you -- how would you treat -- how did you treat those sets of titles in your regression estimates?

A I believe I described this morning, but let me try again. I apologize if I was unclear this morning.

What I did is analogist to my left-handed example. I tried to calculate what was the viewing level of this particular program. And why does preform at a regression with all the data together? Okay, from '00 to '03.

Now, what I know is based upon your local ratings and your distant subscribers, and your program type, time of day -- then given all that, I'm going to ignore the program and I'm

going to tell you what level of distance viewing you have. That's why I gave you the example of IPG program. One example is Bewitched, where Dr. Robinson points out from '00 to '09 in the Nielsen survey data - and let's keep in mind what that is - that's just these diaries going out to people. Did you watch Bewitched? Did you watch Bewitched?

So, the Nielsen data shows no one in that survey watched Bewitched. However, based upon the local ratings of Bewitched, based upon the number of distance subscribers to those channels of Bewitched; based upon the time of day Bewitched was broadcast; based upon the time of day Bewitched was, I -- I estimated that over 384,000 households watched in the quarter hour.

So, that is not zero viewing. That is what I said this morning, after my analysis that I see very few instances of zero viewing.

MR. OLANIRAN: I have no further questions for Dr. Gray, and that actually concludes our direct presentation. We reserve

time with Dr. Gray to come back to present rebuttal.

JUDGE BARNETT: Thank you. Mr. MacLean, anything further for Dr. Gray?

MR. MacLEAN: No, Your Honor.

MR. BOYDSTON: Nothing further, Your Honor.

JUDGE BARNETT: Thank you, Dr. Gray.

THE WITNESS: Thank you.

JUDGE BARNETT: You may step -- I would say step down, but it's really just across. Mr. MacLean?

MR. MacLEAN: Could I have just four minutes to set up here?

JUDGE BARNETT: You certainly may. We'll just vacate.

(Whereupon, the above-entitled matter went off the record at 1:28 p.m., and resumed at 1:34 p.m.)

JUDGE BARNETT: Please be seated. Mr. MacLean?

MR. MacLEAN: Thank you, Your Honor.

Before I get started with Dr. Erdem, I think I'd like to offer into evidence SDC Exhibit 634, which is an excerpt from Dr. Erdem's testimony from 1999 proceedings. Essentially, we don't have his entire testimony as part of our rebuttal statement, but I've included certain excerpts. In particular, we deal with the very mathematical formulas that you'll remember I put on the board last time.

I was not sure whether I would be on allergy medicine today. So, just in case, we included the testimony from last time.

JUDGE BARNETT: Any objection to 634?

MR. BOYDSTON: No, Your Honor. That begs the question, are you on allergy medicine?

MR. MacLEAN: Actually, I'm not. But we'll see how the week progresses.

WHEREUPON

ERKAN ERDEM

was called for examination by Counsel for the Claimants, and, having first been duly sworn, was examined and testified as follows:

JUDGE BARNETT: Could you state your name, spelling both your first and last names for the record?

THE WITNESS: My first name is Erkan, E-R-K-A-N, and last name Erdem, E-R-D-E-M.

JUDGE BARNETT: Thank you.

DIRECT EXAMINATION

BY MR. MacLEAN:

Q Good afternoon, Dr. Erdem. Would you remind the judge briefly of your background and experience?

A Sure. I'm a PhD economist, working at KPMG and focused on data analytics, economic analysis and statistics. I'm also an adjunct professor at University of Maryland, teaching in the applied economics master's program.

Q Could you briefly describe your educational background?

A I have bachelor's degrees in economics and mathematics. I have a PhD in economics from Pennsylvania State University.

Q Is part of your current job to deal

with large data sets and analysis of large data sets?

A We frequently work with large data sets that require a special software such as Daylite.

Q In your -- in your current job and past jobs, have you dealt on a regular basis with statistics?

A Yes, I do.

Q Could you give a brief description?

A Sure. We serve as economists and statisticians at KPMG, and we frequently help internal teams for -- we design data analytics and data intensive learnings.

Q Is your background further set forth in your written testimony you submitted in this case?

A I think so.

MR. MacLEAN: Your Honor, I offer Dr. Erdem as an expert in economics, statistics and data analytics.

MR. BOYDSTON: No objections to those

TAB E

Before the
COPYRIGHT ROYALTY JUDGES
Washington, D.C.

IN THE MATTER OF:	Docket No. 2012-6 CRB CD 2004-2009 (PHASE II)
Distribution of the 2004-2009 Cable Royalty Funds	
IN THE MATTER OF:	Docket No. 2012-7 CRB SD 1999-2009 (PHASE II)
Distribution of the 1999-2009 Satellite Royalty Funds	

VOLUME V

Friday,
April 17, 2015
Room LM-408
Madison Building
Library of Congress
101 Independence Avenue, S.W.
Washington, D.C.

The above-entitled matter came on for hearing, pursuant to notice, at 9:11 a.m.

BEFORE:

THE HONORABLE SUZANNE M. BARNETT,
Copyright Royalty Judge
THE HONORABLE JESSE FEDER,
Copyright Royalty Judge

THE HONORABLE DAVID R. STRICKLER,
Copyright Royalty Judge

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CONTENTS

A No.
Q Why not?
A I am assuming you mean using a regression coefficient from '99 and predicting for the other years similar to what Dr. Gray does and in that case that would not make a difference.
Q Why not?
A Because let's say distant viewing equals their coefficient times and a local reading.
If I use that coefficient to predict the distant viewing for other years for every SDC and IPG show I would be scaling up or down every number I have as local rating for every show by the same amount.
And when I used that eventual to calculate a role of the shared, those coefficients will cancel out. I will end up with the same percentages.
MR. MACLEAN: Thank you, no further questions.

CROSS EXAMINATION
MR. BOYDSTON: Dr. Erdem, with regard to Station WDLI, when you looked at WDLI did you not notice that it's part of the Trinity Broadcasting Network?
THE WITNESS: I didn't notice that.
MR. BOYDSTON: What did you look into in terms of WDLI, how did you investigate what programs it had?
THE WITNESS: In the Nielsen reports I can see every graded show by station name and WDLI doesn't appear on any of the SDC or IPG claim shows.
MR. BOYDSTON: Did you look up WDLI just on the internet or something like that to see whether or not it said, popped up with Trinity Broadcasting with a bunch of religious shows?
THE WITNESS: No. No, no, I didn't.
MR. BOYDSTON: Never mind, or not never mind. Thank you, I have nothing further.
MR. MACLEAN: No questions.

JUDGE BARNETT: Okay, thank you. Thank you, Dr. Erdem.
THE WITNESS: Oh, thank you.
JUDGE BARNETT: Any further rebuttal?
MR. MACLEAN: No, Your Honor.
JUDGE BARNETT: Mr. Olaniran?
MR. OLANIRAN: Thank you, Your Honor, MPA calls Dr. Gray.
WHEREUPON,
JEFFREY GRAY
was called for examination by Counsel for MPA, having been first duly sworn, assumed the witness stand, was examined and testified as follows:
JUDGE BARNETT: Good afternoon, Dr. Gray, you remain under oath.
THE WITNESS: Good afternoon.
MR. OLANIRAN: May I proceed, Your Honor?
JUDGE BARNETT: Yes.
MR. OLANIRAN: Thank you.
DIRECT EXAMINATION
MR. OLANIRAN: Good afternoon, Dr.

Gray. Before I get into the substance of your testimony, you testified a couple of days ago and you had an exchange with Judge Strickler about a robustness test, do you recall that exchange?
THE WITNESS: Yes. Judge Strickler, echoed by Judge Feder.
BY MR. OLANIRAN:
Q Okay. And did you get a homework assignment?
A Indeed I did.
Q And hopefully the dog didn't eat your homework, right?
A She did not, no.
Q Okay. And what were you asked to do?
A Well I'll paraphrase, essentially I was asked to perform a robustness check to see if the regressions that I used over the 2000 to 2003 period if there was any trend within '00 to '03 that would lead me to be more comfortable to continue to use projections for the entire '00 to '09 period.
Q Okay. And did you perform the test?

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A Yes, I did.
JUDGE BARNETT: Mark this MPAA 379.
MALE PARTICIPANT: You spoke so softly I don't know if he heard it.
JUDGE BARNETT: Oh, Mr. Wojack, this is marked as MPAA 379.
MR. OLANIRAN: Yes, Your Honor.
JUDGE BARNETT: 3-7-9.
(Whereupon, the above-referred to document was marked as MPAA Exhibit No. 379 for identification.)
MR. OLANIRAN: Dr. Gray, do you --
(Off the record comments)
MR. OLANIRAN: Dr. Gray, you should have in front of you a document pre-marked as MPAA Exhibit 379, do you recognize that document?
THE WITNESS: Yes, I do.
MR. BOYDSTON: Your Honor, I object. They never provided us with this underlying data even though this has been apparently several days, well it was several days ago when the question came up.

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So we object on the grounds that we didn't get the underlying data for it even though it must have been available before now.
MR. OLANIRAN: May I --
JUDGE BARNETT: You may.
MR. OLANIRAN: Actually as my next question, assuming the exhibit came in, was going to be whether or not IPG could have replicated this analysis because they do in fact have the data.
JUDGE BARNETT: Overruled.
MR. OLANIRAN: Thank you. And I had asked you if you recognized the document and what is the document, just tell me what the nature of the document is without getting into the substance?
THE WITNESS: The document shows some regression robustness checks I did in response to the Judge's homework assignment.
MR. OLANIRAN: Okay. And you prepared this yourself?
THE WITNESS: Yes, I did.

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MR. OLANIRAN: Your Honor, I move to admit MPA Exhibit 379.
JUDGE STRICKLER: Dr. Gray, when did you prepare this?
THE WITNESS: That was Monday evening, or maybe it was Tuesday evening. I don't recall exactly when.
JUDGE STRICKLER: You don't recall if it was Monday or Tuesday?
THE WITNESS: Correct.
MR. OLANIRAN: But I believe we provided to opposite counsel I believe on Wednesday.
JUDGE BARNETT: Oh, not just now?
MR. OLANIRAN: No.
JUDGE BARNETT: Okay, all right.
MR. OLANIRAN: And, Dr. Gray, just to be clear --
JUDGE BARNETT: Oh, well it's been offered and I haven't heard from --
MR. MACLEAN: No objections.
MR. BOYDSTON: I'm sorry, I don't

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recall getting this until now.
MS. PLOVNICK: No. I emailed it to you Wednesday.
MR. BOYDSTON: Okay. I didn't recall.
JUDGE BARNETT: 379, is that the number we're on?
MR. OLANIRAN: Yes.
JUDGE BARNETT: 379 is admitted.
(Whereupon, the above-referred to document was received into evidence as MPAA Exhibit No. 379.)
JUDGE BARNETT: Now you may ask questions.
MR. OLANIRAN: And, Dr. Gray, just to be clear, would Dr. Robinson have been able to replicate the content of Exhibit 379?
THE WITNESS: Yes. She has all of the underlying data to replicate this.
MR. OLANIRAN: And to be more specific what are the underlying data that you used to --
MR. BOYDSTON: Your Honor, just another objection for the record. When we got

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this Ms. Robinson was already testifying and so we could not speak to her about this, present this to her, or ask her to try to replicate it.

And, therefore, we had no opportunity to be able to have our witness even understand what's behind this, and so I object on those grounds.

JUDGE BARNETT: Thank you, Mr. Boydston, but the robustness issue arose in the written papers, it didn't just arise here. Wasn't there a robustness test in your written testimony?

MR. BOYDSTON: Well but this came, this was in response to a question by Judge Strickler, not something -- It hadn't been done in his papers, Judge Strickler asked if he would perform that.

JUDGE BARNETT: Is that correct?

THE WITNESS: That is correct, yes.

JUDGE BARNETT: Oh, okay.

MR. BOYDSTON: Well it is --

JUDGE STRICKLER: Also, excuse me,

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whether or not Dr. Robinson would've had the time to do this sort of speculative exercise because you don't recall receiving it on Wednesday by email anyway so you never had a chance to answer it.

MR. BOYDSTON: Well my client remembers receiving it. A lot went on Wednesday night. I know that we received it based on what my client says and we didn't forward it to --

JUDGE BARNETT: Let me cut to the chase. This was a question by one of the panel and so we would like to have the answer. You will have an opportunity to respond in your written materials that we expect to come flowing in after this hearing is over.

MR. OLANIRAN: But in all fairness, Your Honor, this particular robustness issue is actually Dr. Robinson's criticism of Dr. Gray and to the extent that she wanted to do a robustness test she had all of the data to do that test. She chose not to.

JUDGE BARNETT: That's fine. I'm just

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saying the Judges asked the question.

MR. OLANIRAN: Understood.

JUDGE BARNETT: It was not part of her testimony, it was not part of Dr. Gray's original testimony, but we opened the box so we would like to give everybody an opportunity to close the box.

MR. OLANIRAN: Dr. Gray, could you please explain what's going on with respect to, explain what you have done with respect to MPAA 379?

THE WITNESS: Yes. I guess I'll just walk you through the table and read for this right to left.

For example, on the first panel where I have "Cable," the final column where it says "All," are actually the results that are in written rebuttal testimony, both for cable and satellite.

And so what that means is those are results where I used the 2000 to 2003 time period to perform my regression analysis to get the

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correlation between local ratings and subscribers and distant viewers and then extrapolate it out across the entire time period.

Then the next step I did, and as I explain I think you'll see why it should be relatively straightforward and easy for Dr. Robinson to replicate, is I took the same exact program and then just used the 2000 data and ran the same regression, the same sort of structure, and extrapolated out to everybody, and that would be the first column.

JUDGE BARNETT: Did it make that sound?

THE WITNESS: Yes. I apologize to the Court Reporter. And then, so, again, the first column for 2004, 2000 cable is 99.42, et cetera, and then for the next column I did the same thing but I only used the 2001 data and performed the regression analysis and then did the predictions for the entire period, and so forth for 2002 and 2003.

I'll talk about satellite next, but

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what you'll see is I would describe that as fairly stable across the four periods using each year individually and reasonably similar to using all of the periods polled, if anything to, you know, just an intuitive eye, there might be a slight uptick to MPAA's advantage as you go across the four periods.

So if perhaps you put in a trend variable or something to that effect you might lead to slightly higher calculated royalty shares in the remaining periods. That's cable.

A similar comment with respect to satellite, the same thing was done. I had to do something a little different with '02 and '03, and I'll talk about that momentarily, but in terms of the final results you'll see, again, quite stable in my opinion calculated royalty shares, and these are I should say MPAA royalty shares.

For '02 and '03 in satellite, you know, I ran these separate regressions for WGN and all other stations, due to the paucity of

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data for both those two years, and I had a relatively complicated Plauson regression, it needs a decent amount of data to calculate the poignantness of it.

For both those years the Plauson, to use a technical term, did not converge, so I needed more data so what I did was to pull '02 and '03 together to see, again, if it's relatively stable across the four years.

In my opinion it is. So this gave me, or reaffirmed my confidence that it's reasonable to use the '00 to '03 data to calculate viewing shares throughout the entire period of this year.

And I'm hoping this answers the Judge's question on Monday, and I'm happy to answer subsequent questions and even receive subsequent homework assignments.

MR. OLANIRAN: Okay. Now turning to your rebuttal testimony, you prepared a written rebuttal report in this proceeding did you not?

THE WITNESS: Yes, I did.

BY MR. OLANIRAN:

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Q Okay. And I'm happy to let you know that that document has been admitted into evidence as MPA 373, and the orange binder is front of you, you can easily refer to it.

Do you have it in front of you?

A I do.

Q All right. And what do you address in your rebuttal testimony?

A Well I was asked to review the testimonies of Raul Galaz and Laura Robinson and evaluate whether or not IPG was proposing a reliable methodology with associated reasonable and reliable royalty shares.

Q Would you please give a summary of your opinion with respect to Mr. Galaz's testimony?

A I suppose the simple summary is that he does not propose an allocation methodology or royalty shares.

Q And would you please summarize your finding with respect to the testimony of Dr. Robinson in the opening and supplemental reports

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submitted by Dr. Robinson in this case?

A Yes. It's my conclusion that her methodology was flawed conceptually and in its application such that it rendered her reported royalty shares unreliable.

Q And why do you say that? Let's start with your criticism as to the conceptual problems with her methodology.

A Sure. Perhaps I'll describe the methodology, although I imagine it's been talked about while I've sequestered, so she starts by calculating, or purportedly calculating IPG's volume share and then applies three separate shift factors, as I call them, to obtain three independent royalty share calculations.

And each calculation is incomplete and unreliable and more than that actually she starts with a volume share calculation that's biased and inflates IPG's volume share because it relies upon a non-random sample.

Q Okay. Now why do you say that the volume share is a problem?

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A Well it starts with using this overlap sample, as I call them, and her overlap sample is the overlap of her stratified sample and my stratified sample, and each of ours were designed to be disproportionately, sort of selecting larger, or stations that are re-transmitted to a greater number of distant subscribers.

In fact, the largest are slightly with certainty the, you know, medium/large are slightly the high probability and so forth, and so you can think intuitively if you do an overlap of those two samples you're going to get all those very large stations, all these other shorthand stations that are distantly re-transmitted to a lot of subscribers.

You'll get all of the extremely large ones, most of the large ones, and very few of the small ones.

The reason why it's problematic in this case is if you look at her own calculation with respect to her subscriber count shift factor she finds that IPG programming, in terms of the

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distribution, not on absolute levels, the IPG programming tends to be on larger stations.

So what that implies is if you are to make this overlap sample more representative, that it's bringing smaller stations, medium-sized stations, et cetera, according to Robinson's own calculations, you will get lower, lower on average IPG volume shares.

So it was a result of having this overlap sample she has a volume share calculation that's inflated.

Q Okay. Now with respect to her time-of-day calculation you were critical of that also, were you not?

A I am critical of each royalty share calculation, yes.

Q Okay. Well let's talk about the time-of-day calculation. First describe your understanding of what she did with that and then following that why you think that is problematic?

A I don't know how much detail to go into, so she essentially calculates effectively

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the sort of the percentage of programming of IPG's takes place in each quarter-hour, it's raise it by the percentage of viewing.

Maybe if I sort of describe it you'll see clearly what she did, is she starts with, imagine three columns. This is the way I think, I don't know if the Judges think this way.

In the first column, which is like there's 96 rows for each quarter-hour, will be Nielsen's United States aggregate viewing. So in the middle of the night, relatively small numbers, peak time, relatively large numbers, okay. So that's the Nielsen data.

Q And that's Nielsen data, that's not the same as the Nielsen data that was used, the Nielsen diary data?

A No, no. Again, this is just United States annual viewing calculated by Nielsen, not just, you know, just total U.S. viewing.

And the next column calculates for each United States what percentage of IPG's volume takes place, and relative to MPAA, you

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know, it tends to take place in the middle of the night.

So you have larger percentages like 5, 8, 9 percent in the middle of the night, smaller numbers at peak time. The next column, same thing for MPAA, whereas the pattern is reversed though.

And then if you multiply, see if you can do this in your head, it would be IPG numbers by the Nielsen numbers all the way down then you get a number.

You do the same thing for MPAA and it'll be a larger number because MPAA's percentages are when Nielsen viewing is big. So you have an MPAA number, an IPG number, and she takes a ratio.

IPG's number is smaller so I think, cable is about 75 percent and satellite was like 80 to 85 percent.

Q Okay. Now what is the problem with that calculation?

A Well the largest problem is that it's

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incomplete, because it's true the time of day isn't economic indicia of value largely because it is correlated in the field.

But there are other things that impact, you know, there are other things that impact value. As she says in her testimony the number of distant describers that have access to this sort of program is important.

But for this metric she doesn't control for it. Whenever people actually view that specific program is critical and she makes no control for the popularity of the individual program.

So it can only go so far, and so my big criticism of that factor, which is probably I think slightly better than the other two, but it still falls short of being a reliable measure.

Q And do you discuss in some more detail your criticism of the fees paid factor and the subscriber count factor?

A In my written direct testimony I do, yes.

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Q Yes. I mean in your written direct or your written rebuttal?

A I'm sorry, in my written rebuttal. Thank you.

Q Thank you. And your conclusion as to the three factors being used to estimate royalties, royalty allocation is what?

A Well, yes, to summarize, what you have are those three factors that are incomplete yet all based upon an inflated and bias volume measure, so, yes, I see no reason to rely upon them.

JUDGE STRICKLER: Dr. Gray?

THE WITNESS: Yes?

JUDGE STRICKLER: We factor there are three different alternative measures in Dr. Robinson's approach. Do the deficiencies that you've testified to with regard to each of the individual of the three methodologies that she has, do they in any sense offset each other?

In other words, is the weakness of one a relative strength of the other?

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THE WITNESS: No. I see no positive attributes of the weaknesses, and if they don't counter balance at all it gives you independently sort of incomplete and unreliable -- Each is inflated due to the volume share and I don't know how one could use these three metrics to come up with a reasonable royalty rate.

JUDGE STRICKLER: So each is unhappy in its own way?

THE WITNESS: Each is very unhappy in its own way.

JUDGE STRICKLER: Okay.

MR. OLANIRAN: And your opinion remains the same even though she recommends a range and then picks a midpoint from that range with respect to IPG's share?

THE WITNESS: As I wrote in my written rebuttal testimony, I see no economic reason why the midpoint of two incomplete and unreliable numbers should be reliable or complete. I can't imagine.

BY MR. OLANIRAN:

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Q Now you also talked about application flaws. You talked about attribution of titles to IPG for years that IPG did not claim for, could you discuss that?

A Yes. What it was is we received in Discovery of the other counsel just a list of IPG's claimed titles associated, together with these years that they were claiming them, and for many of these titles Robinson claimed them for the entire period even though IPG itself did not appear to be claiming those titles.

Q I know you spoke already about the random and non-random sample, which you also talked about in your written rebuttal, correct?

A That's correct.

Q Now you talked in a lot more detail in your written rebuttal about both the conceptual flaws and the application flaws in Dr. Robinson's testimony, do you not?

A I do.

Q Okay. Are you aware that on March 13, 2015, the Judges issued an Order with regard to

claims in this proceeding?
A Yes, I was provided a copy of the Order.
Q Right. And that the Judges directed the parties to update their claims to reflect their determination in that Opinion, right?
A You mean to update the analysis?
Q Yes.
A Yes.
Q And did you do so?
A Yes, I did.
Q With regard to both cable and satellite?
A Yes.
Q Okay. And where are the results reflected in your written rebuttal testimony?
A They would be on page, on the Table on Page 21 and also discussed in the paragraphs on Page 21 and 22.
Q Dr. Gray, let's sort of shift gears a little bit now to talk about Dr. Robinson's criticism of your written direct testimony. And

have you had a chance to review Dr. Robinson's written rebuttal testimony?
A Yes, I have.
Q And where she talks about your methodology?
A I have, yes.
Q Okay. And you had a chance to identify the issues that she raises of problems with your methodology, correct?
A Yes.
MR. OLANIRAN: Okay. Now let's talk about the specific topics that she talked about. The first issue Dr. Robinson --
MR. BOYDSTON: Your Honor, I'll just issue my objection here. Again, he now is getting a chance to rebut Dr. Robinson's rebuttal.
Dr. Robinson doesn't get a chance to rebut what he's saying right here and I don't think that's fair and I object on those grounds.
JUDGE BARNETT: It's so noted. Mr. Olaniran, please complete this.

MR. OLANIRAN: Thank you, Your Honor. Dr. Robinson states that your relative value metric is conceptually flawed because it relies entirely on relative distant viewership, how do you respond to that?
THE WITNESS: Well I suppose two-fold. One, and I discussed this on Monday, I think a relative viewership is in and of itself, given that this is a Phase II proceeding, a good measure of relative value.
I think it does a good job at measuring the marginal contribution of programming, but, secondly, I should say in my amended testimony I also analyze the impact of viewership on a number of subscribers as well as the impact of IPG's programming mix on the number of subscribers.
BY MR. OLANIRAN:
Q And next Dr. Robinson talks about, she states that the relative estimates is based on limited data and she refers specifically to your use of the 2000 through 2003 sweeps data as a

basis for all the subsequent calculations. Is this criticism justified?
A Not in my opinion. And I did, again, talk about this on Monday, but I find the '00 to '03, both cable and satellite, diary data to be very rich and useful with, you know, 1.4 to 1.6 million quarter-hour observations of viewing that enables one to project viewing to non-sweeps periods.
In fact, just let's you project it to the entire period for it on a quarter-hour basis, 24 hours a day, seven days a week, 12 months a year, for each year.
Q Now Dr. Robinson also talks extensively about what she described as a high incidence of zero values in the Nielsen data. Do you recall that?
A I do.
Q And I know you talked, or you already testified as to the nature of zero viewing in general.
My question is that is it true that

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the zero viewing issue, if you will, somehow disfavors IPG?

A I don't see how it disfavors IPG. You know, and when we're talking about zero viewing let's be clear that well it's not actual zero viewing, but it's recorded no viewing in a Nielsen survey data.

What's true, and Dr. Robinson points this out in her rebuttal report, IPG has a lot more instances of zero recorded viewing than does MPAA and that's why in my methodology actually I estimate viewing for every single quarter-hour, including those where there is Nielsen data, and that's the right thing to do.

I know she suggests to use the sort of "actual," but it's not actual zero viewing, and override it. That's a flawed recommendation. I could go into more detail as to why.

Q Did you by any chance, do you have a sense for between the hours of 12 midnight and 6:00 a.m., do you have a sense for the percentage of the total IPG attributed titles that are

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present in that timeframe versus MPAA's?

A I looked at volume, I don't recall looking at titles in terms of --

Q I meant volume, I'm sorry.

A But, yes, IPG is, about 25 percent of their volume occurs between midnight and 6:00 a.m., whereas about 6.6 percent of MPAA's programming takes place between midnight and 6:00 a.m.

JUDGE STRICKLER: That's 6 percent you said?

THE WITNESS: Yes. I believe it was 6.6, 6.8 percent. It's less than 7 percent and I have a lot of numbers in my head.

JUDGE STRICKLER: Were the zero viewing points concentrated within any particular time period?

THE WITNESS: Zero viewing occurs, yes, much more commonly in the middle of the night.

JUDGE STRICKLER: And you saw that in the data?

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THE WITNESS: I see that in the data and I believe Robinson even has tables confirming that as well. Dr. Robinson.

MR. OLANIRAN: Dr. Robinson criticized you for using compensable and non-compensable broadcast data in the satellite, but you used only compensable broadcast data for your cable estimates. Do you have a response to that?

THE WITNESS: I used all the data that was provided to me in both of the circumstances. So with respect to cable that was actually filtered by the Reznick Group and they provided just MPAA and IPG compensable programming.

So my hands, for lack of a better expression, were sort of tied and I had to do an analysis just within the program supplier category to calculate MPAA and IPG viewing shares and that's what I did.

For satellite I was given all the data and so, and there's no reason in my mind or in my training with the way I train my students, trained in my students, to throw out data, so I

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calculated viewing for every single program.

But then when I calculated relative viewing shares for MPAA and IPG I restricted it just to MPAA compensable and IPG compensable programming.

I did though, a long time ago, actually last summer, repeat satellite analysis using just program supplier categories, and so I do the same approach I did within cable, and the resulting viewerships were slightly higher for MPAA, that is to IPG's advantage the way I did it rather than the way Dr. Robinson proposed.

BY MR. OLANIRAN:

Q Thank you. Dr. Robinson also criticizes your subscriber regression has many flaws, do you recall that?

A I do.

Q Yes, and what is the nature of her criticism exactly?

A She thought that rather than looking at sort of the last year's programming mix of, you know, IPG relative to MPAA, that's impact on

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this year's subscribers that you should not look at that and just look at this year's impact on the simultaneous subscriber count.

But the entire structure of the regression does the following, it looks at the questions, so was last year's change in viewing, how does that affect this year's subscribers?

What we find is, you know, the more viewing there was last year, the more subscribers there are this year.

And then the next thing you want to say is well, what about that program mix last year, if there's like more programming that's IPG last year across all these stations is there more subscribers this year, and that might be an indication, emphasis on might, be an indication that IPG had some sort of special niche programming.

But I think it's critical to look at the lags for both into this year's, and that's what I do, and with updated titles I find a positive relationship between last year's viewing

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and this year's subscribers and a negative, but insignificant, relationship between IPG's programming and the number of subscribers this year.

But it's insignificant, it's a huge standard error suggesting that there's a lot of other things going on in subscribers' decision making.

Q Just to summarize what you just -- I want to make sure I understand.

A Yes.

Q You are trying to see whether or not the extent to which IPG's program and MPAA's program are driving subscribership for a voluntary --

A Correct.

Q And you were able to establish that neither party's program drove the level of subscribership for subsequent years, is that a fair way to describe that?

A That's a more succinct way of it, yes.

Q Okay. Dr. Robinson also opined that

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your regression analysis is flawed because of your choice of data and choice of variables for including it in your regression analysis.

But just going back, you talked about your sample selection a little bit earlier, I just want to be sure you employed a random sample?

A Yes.

Q Okay. And a stratified random sample?

A Correct.

Q And did you apply sampling weights by strata?

A Yes.

JUDGE STRICKLER: When you say "sampling weights" wouldn't you agree sampling weights by strata you mean by stratifying that inherently creates the weights?

THE WITNESS: Well you calculate the weights based on the probability of being selected out of that strata, so it's a proportionate stratified sampling.

And so like the weights for the, the

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largest is actually a weight of one, because that one's picked with certainty, and your probability of being selected within each strata is the fraction of the number of stations in that strata, so a proportionate stratification.

MR. OLANIRAN: Dr. Robinson also talks about your choice of omission of an indicator variable for the year 2000. Could you explain why you did that an in fact if any that has on your regression analysis?

THE WITNESS: Right. So when I ran the regressions, both in cable and satellite for the 2000 to 2003 period, from which I projected, I put in what are called categorical variables, or indicator variables, which are zero one variables for the year, and what that does is just control for, all those equal, just overall levels of distant viewing throughout the period.

And then we use these coefficients to project out in time for the '04 to '09 period because it's a Plauson and because there are two separate regressions it does matter which year is

omitted when you make these projections.

Now is Dr. Robinson going to know by looking at my programs? What I did is I let the computer sort of select which year to omit. So there was no intentional bias on my part and my next step was to check if there was any unintentional bias.

A couple ways of doing that, but the simplest way is just to remove those year controls. I suspect that's something that Dr. Robinson did, so if you just run the regression again but remove the year controls what you find is very similar results.

In fact, for each cable royalty year and each satellite royalty year the estimate removing these year dummy controls is within the 95 percent confidence interval that I report in my written rebuttal testimony.

So the conclusion is with respect to the omitted year, it's no intentional bias, no unintentional bias, and inconsequential.

Q And overall how would you describe Dr.

Robinson's criticisms of your methodology?

A Inconsequential, for lack of a better word.

Q And you now have updated share allocations for IPG and MPAA, do you not?

A Yes, we talked about them ten minutes ago, or pointed to them in the report.

MR. OLANIRAN: Okay. Your Honor, I have no further questions for Dr. Gray.

MR. MACLEAN: Nothing from us, Your Honor.

MR. BOYDSTON: Your Honor, we do. Some of this is brand new, can we have a few minutes to, take a break for a few minutes?

JUDGE BARNETT: If we take our afternoon recess at this point there will be no further break before closing, if there's going to be a closing.

MR. BOYDSTON: I think we can power on through as we did earlier.

JUDGE BARNETT: Okay. We'll be at recess for 15 minutes.

(Whereupon, the above-entitled matter went off the record at 2:18 p.m. and resumed at 2:40 p.m.)

JUDGE BARNETT: Please be seated. Mr. Boydston?

CROSS-EXAMINATION

BY MR. BOYDSTON:

Q Thank you, Your Honor. Good afternoon, Dr. Gray. I'm Brian Boydston, Attorney for IPG, as you'll recall.

A Good afternoon.

Q In a number of the questions I'm going to ask you, I'm really just trying to establish whether or not some of these things were mentioned in your rebuttal, and partly just to make a record as to that fact or non-fact.

Before I do that, I'm going to ask you about the new exhibits on your regression robustness check, Exhibit 379. And you said this was created some time after last Monday, when the issue first arose, correct?

A Correct. Actually, I gave it to

counsel on Wednesday.

Q Okay, I assume that the underlying data that you used to produce this is in existence, is available so to speak?

A Dr. Robinson has in fact -- the fact that she was able to replicate my results means all -- she just needed to write a single line in the program to generate these results.

Q Okay, well, there's some record of what you did to create this, right?

A Again, all she had to do was repeat the analysis, restricting it to each of the single years.

Q Okay. Is there something that you can provide us, which describes that? The problem is that I am not a statistician or a mathematician. So, I can't -- I don't know how to tell her how to do this.

A I showed her this, and showed her how to do it, but I'll tell you what the program code is.

For example, for 2000, she'd go in and

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write, "Keep if year" -- K-E-E-P if --
JUDGE BARNETT: Could you exchange this information off the record later?
MR. BOYDSTON: That's what I was getting at.
JUDGE BARNETT: Okay, this doesn't need to be in the record. I don't think.
MR. BOYDSTON: I just want to know if we can get it, and if I could ask that you provide that information to counsel and it be forwarded to me. Is that fair enough?
MR. OLANIRAN: That's fine with us, Your Honor.
JUDGE BARNETT: Thank you. ASAP.
MR. OLANIRAN: Will do.
BY MR. BOYDSTON:
Q Now, you were talking about Dr. Robinson's methodology and recalculation of volume. You said you believe that it was biased because it was non-random. Now, I did not recall seeing any statement to that effect in your written rebuttal statement. Is that fair? Is

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that true, I should say? I looked and I didn't see anything saying that you felt that that was biased because it was non-random.
A I describe her results as unreliable because they relied upon a non-random sample. I presumed that she was going to fix that for the rebuttal testimony.
Q Okay, can you help me out and tell me where it is you say that? Where is it that you raise the non-randomness, if you will, as being an issue? It may well be in here, I just looked during the break and I did not see it.
A It's on page 15, section 4, subheading A, which the subheading is titled, "Robinson relies on a non-random sample and filtered data."
Q Okay, where do you say it's a bad idea to use a non-random sample? Is that -- I saw the reference that she uses a random sample. I didn't see anything saying it was bad.
A I'll read a couple of sentences for you. The second and third. "This overlap is itself a non-random sample and not representative

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of the population of stations carried by CSOs or SSOs."
Q Okay, and I see -- it's verbatim. So, I understand now. I got it.
A Okay.
Q Where does it bias -- where does a bias come into this in IPG's benefit?
A Well, I describe how the bias is evidenced in her sample that she reports.
Q And I understand that.
A Actually, in this rebuttal report, I do not describe that it is inflated in IPG's advantage.
Q Okay, so you don't say that it's inflated in IPG's advantage. That's your testimony today?
A Like I said, it's biased. It is to IPG's advantage, but either way, it is biased and therefore unreliable.
Q I'm sorry. I'm not sure I caught it all.
A I apologize. I'll speak slower. I

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was trying to be cognizant of time. In my written rebuttal report, I describe it as being biased. I don't see in the paragraph here the fact that it is biased to IPG's advantage, but I -- that is a fact. But either way, it's biased and therefore unreliable.
Q You're saying in addition not just biased, but you've calculated that the bias works in the benefit of IPG?
A It's implied based upon her subscriber count shift factor.
Q But you haven't actually -- you haven't actually calculated that to confirm that?
A You would need a representative sample to be able to calculate the magnitude. I only know the direction of the bias.
Q But you haven't calculated it?
A I'll repeat. It's -- I haven't calculated it --
Q Then the answer is no.
A I --
JUDGE BARNETT: He just said he had

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not calculated it.
THE WITNESS: Not only did I not, I cannot. I would need a random sample.
BY MR. BOYDSTON:
Q Fair enough. All right, now I understand. With regard to the issues of the overlap and the incidents of large stations being over-represented in the overlap, do you recall that?
A Yes.
Q And you felt that that resulted in a bias in IPG's favor, correct? You didn't use the word bias, but I think you were saying in your oral testimony that that inflated IPG's share, correct?
A That is correct.
Q Now, again here I think that looks -- I did not see that in your rebuttal testimony. At page 6 of your rebuttal testimony, you do discuss the time of day issues. Admittedly, what you discuss is time of day issues, but I don't see anywhere where you explain that there's -- it

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works in the favor of IPG.
A Are you speaking with respect to time of day or now just the overlap?
Q I beg your pardon. I switched gears, and I think it's because my writing was messy. Let's stick with the overlap. Do you discuss the impact of that in IPG's favor in your rebuttal statement?
A As I spoke moments ago, I just referred to it as a bias. I did not in my rebuttal testimony, written testimony, describe it as being in IPG's favor.
Q Okay, but you didn't calculate to what degree?
A I'll repeat. I'm not able. One is not able to calculate to what degree because it's a non-representative sample. Question is what would be volume share be in a representative sample?
Q Okay, you didn't calculate it and it's not quantified anywhere as a result?
MR. OLANIRAN: Objection, Your Honor,

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asked and answered.
MR. BOYDSTON: Well, he's using -- in case he was quantifying it in some other way.
THE WITNESS: One way to quantify it --
MR. OLANIRAN: I have an objection.
JUDGE BARNETT: Yes, it's sustained.
BY MR. BOYDSTON:
Q You were just saying now one way to quantify it would be -- well, actually, never mind. I'll move on. Now, let's move to time of day, which you address, start to address, at page 6 of your rebuttal testimony.
In your oral testimony here, you discuss the averages of Nielsen data and you expressed it in terms of viewing it as three different columns. Do you recall how you described that orally?
A Yes.
Q And that -- and you gave an example of why it was that that would not -- why you had a criticism of why it was not appropriate, right?

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A That wasn't a criticism. That was just a description of her methodology.
Q Okay, but ultimately, you made the statement that you felt that as a result the analysis was -- I caught the word incomplete.
A It's incomplete because it only has this time of day shift factor on volume. It does not take into consideration, for example, the number of distant subscribers who have access to this program, and that's an economic issue that Dr. Robinson herself said was important.
More importantly, it does not take into consideration whether or not anyone actually viewed any of IPG's programs, which I think is very important to note.
Q Now, is that in your report at page 6 or thereafter?
A It will be in my report, yes.
Q Okay. Page 6 I see. Paragraph 10 is where you start your time of day discussion, and then it continues onto the next page to paragraph 11.

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A It would be in paragraph 11. Would you like me to read paragraph 11 into the record?

JUDGE BARNETT: It's in the record. You don't need to read it.

BY MR. BOYDSTON:

Q It doesn't say here that that benefits IPG though, does it?

A No, it does not. Nor did I say that earlier. All I said is it's an incomplete measure, and therefore not in line with the measure with respect to usable royalty share.

Q Now, you, in your rebuttal report, addressed titles claims issues and criticized Dr. Robinson for essentially including titles that she shouldn't have, correct?

A That is correct.

Q Have you had the chance to review Dr. Robinson's revised numbers that have addressed that? I presume not.

A Well, my team actually has started to and has not made all the corrections. For example, Tomorrow's World, which I reference in

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here under page 18, Section C, that is a title that IPG did not claim that Robinson includes. It's actually still in the data that we received yesterday.

Similarly, we see many titles. We see Canadian titles still in the data that have not been removed. So, there are -- the calculation that we received yesterday still seems to have flaws in its application.

Q That's because you believe that those Canadian programs are not compensable, right?

A That's because I didn't total that. Also, Tomorrow's World certainly is not one that IPG appears to be claiming.

Q And so, your understanding of the Canadian inclusion or non-inclusion is totally dependent upon what you've been told by counsel in terms of criteria, correct?

A Correct, but --

Q And so, your criticism of Dr. Gray is based on what you've been told the criteria is by counsel?

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A No criticism of Dr. Gray, but of Dr. Robinson.

Q Thank you.

A One of the criticisms is with respect to the written rebuttal testimony of Marsha Kessler with respect to the Canadian programming, but again, as I said on Monday, I have to be told which title is compensable, and which title goes to IPG or MPAA. I don't have a dog in this hunt.

Q Understood. With regard to relative distant viewership, you discussed Nielsen data, and you said -- I think you said many times that you believe that the 2000-2003 Nielsen data is useful and works in making that calculation. Correct?

A Yes.

Q And just to confirm, that Nielsen data is Nielsen data for distant viewing, correct?

A Nielsen cable data, yes.

Q It's not for local viewing, correct?

A For the distant viewing. There's local ratings I use in the regression.

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Q And those local ratings I believe are just the diary, or excuse me, the meter ratings?

A Local ratings? I understand them to be the meter, yes.

Q Which it's a meter, rather than someone writing it down by hand, which has something of an enhanced credibility, I suppose. Would you agree?

A It actually has pros and cons. One of the sort of cons, of course, is with respect to ratings data, which is the meter data. That's just a television being tuned in to a program, whereas the diary data someone is actually watching it.

I can tell you just the other night, I went to sleep in front of the television and woke up but a couple hours later.

Q A common problem. Meter data is also less prevalent, I think, than diary data, by a pretty fair margin. Correct?

A That's what I've been told by Nielsen, yes.

Q Now, you said that you looked at the IPG programs as to when they fell during the day part viewing. Day parts, correct? You found that they were -- there was some concentration of them between 12:00 and 6:00 a.m.?

A Yes, and this is consistent with Dr. Robinson's time of day shift factor.

Q Now, when did you -- when did you make that analysis?

A I'm not certain exactly. Someone on my team did it. I didn't do it myself, but I believe it might've been last week.

Q So, it was not in your -- fair enough to say it was not in your report since the report was filed before then?

A That is correct.

Q Now, you also apparently did a zero viewing analysis. You said last summer. Do you recall that testimony?

A Not sure what you mean by zero viewing analysis.

Q Well, you referred to -- let's start

with this. I know I heard last summer that you performed a certain analysis. You thought it was last summer. Do you recall that?

A I did a lot of analysis last summer.

Q Well, it was something you mentioned about 15 minutes ago.

A I'm not actually sure what analysis I referred to 15 minutes ago, but I did quite a bit of sensitivity analyses this past summer, and I might actually have done this very one this past summer. But I'll just double check. By this very one, I should say for the record, I'm referring to Exhibit 379.

Q Okay. Did you do an analysis of zero viewing at some point before these proceedings that you shared with Mr. Lindstrom?

A I don't recall doing an analysis of zero viewing per se. That's why I'm trying to understand what your question is.

Q I thought I heard you saying that you performed an analysis of zero viewing last summer, and if you didn't, fair enough.

A Right. Again, I don't use zero viewing as an issue. I view it as data.

Q I understand.

A Okay.

Q We do view it as an issue, and that's why when you said that, it caught my attention. And if you did an analysis of zero viewing, I was curious because I'd asked you on your direct testimony about that. My understanding is that you had.

A Right, that's why I'm confused by your line of questioning at this moment.

Q I heard something 15 minute ago. Maybe I misheard it. But just to make the record clear, as far as you know, and no one should know better than you, you have not performed any specific analysis of zero viewing and its implications?

MR. OLANIRAN: Objection, Your Honor. Asked and answered.

MR. BOYDSTON: Okay, I can see how it's been asked and answered. So, I'll move on.

JUDGE BARNETT: I was going to overrule the objection. So, if you'd like to answer.

THE WITNESS: I don't know what I said 15 minutes ago, but I --

MR. BOYDSTON: I honestly may have misunderstood.

THE WITNESS: I never did any analysis with respect to zero viewing. I've done lots of analyses using the data that has observations of zero viewing and I certainly have concluded I don't see any issue with relying upon that data.

BY MR. BOYDSTON:

Q You've seen data that -- that indicate levels of zero viewing, correct?

A Yes. In '00 to '03 proceedings, I know Mr. Galaz did some analysis. So, at that point in time, I feel like he had replicated his analysis. So, if you define that as an analysis of zero viewing, all it is doing is counting the number of observations where Nielsen has no recorded viewing.

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So, I certainly had people replicate Mr. Galaz, and --

Q Did they more or less replicate his results?

A I don't recall, but I'm sure they found some results. I just don't recall at this moment. This was a couple years ago. But again, we didn't make any conclusions that the data was unreliable.

Q And in doing that analysis, did you recall generally that you found instances of zero viewing depending upon the channel ranging anywhere from only like a few percentage points to 100 percentage points at times depending upon the stations?

A There was variability.

Q And do you also recall looking across the board and averaging zero viewing incidents across stations, in addition to just looking at individual stations? Because Mr. Galaz did that; I'm thinking you probably replicated that as well.

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A I or my team probably replicated his results.

Q And do you recall if you did that averaging zero viewing across stations, you got numbers which were certainly above 50 percent. Sometimes as high as 80 percent?

MR. OLANIRAN: Objection, Your Honor. Now, we are really getting outside the scope of Dr. Gray's testimony. He's asking Dr. Gray to testify to an analysis he may have -- may not have done maybe two years ago. It's not in evidence in this proceeding. May have been related to evidence from a last proceeding.

JUDGE BARNETT: I don't need a narrative, Mr. Olaniran. I've got the objection. Do you want to respond?

MR. BOYDSTON: He raised -- he raised zero viewing in his testimony, and he also raised relative viewership, and that's --

JUDGE BARNETT: But you've asked, I think three times, whether he's done an analysis of zero viewing and I believe he has answered

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three or four times he did not.

MR. BOYDSTON: Well, I know. Now, I'm preferring to what -- he said he replicated Mr. Galaz's results. I'm just asking him a question about what he observed in that.

MR. OLANIRAN: He said he replicated Mr. Galaz's results from another proceeding.

MR. BOYDSTON: True, but he's saying -

MR. OLANIRAN: Or someone on his team did that. Now, we're getting into the specifics of the results of that analysis, which is --

JUDGE BARNETT: Your relevance objection is sustained.

MR. OLANIRAN: Thank you.

BY MR. BOYDSTON:

Q You have said that you don't think zero viewing is a problem, correct?

A I've said that repeatedly, yes.

Q And so, you don't think it's a problem if it's at 80 percent averaged across all stations?

A In large part because we make hundreds

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of thousands of observations of positive viewing, and it's just indicative that this viewing is not relatively common.

Q Would your opinion be the same if zero viewing was an incidence of 99 percent across all stations on average?

A It depends upon the number of observations I have of positive viewing.

Q At some point, if it got high enough, would you say, "Well, I guess now it is an important issue?" Like 99 percent, for instance?

A I don't know where the break would be, but at some point I would start thinking about the specification, what kind of econometric model to apply toward the -- it's a level now where certainly you can't do a regular linear regression. That's why I do the Poisson.

Q So, do you -- I'm not going to ask you for a specific break point because you said you don't know what it is. But is there -- do you believe that there would be some point at which if you saw zero viewing above a certain point,

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and I'm asking you to define that point, or would there be some point where you would say, "Okay, now the zero viewing is so high I do think it is an issue?" Or, is it just a factor that wouldn't matter no matter how high it got?

Q Every time I work with data, which is quite often, I look at it carefully, analyze it and try to consider what kind of a model to apply to it, what kind of statistical method to apply, and so whether or not there is a lot of missing information, whether or not there's a lot of any particular values where one needs to do a sophisticated analysis.

Sitting here today, I can't think of a particular break point where I would change my methodology, but I can tell you this: Given an instance of zero viewing in this matter, I'm perfectly comfortable with the application that I performed.

Q You're not rejecting the notion that at some level, perhaps not here that we see, but at some level, zero viewing might theoretically

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become a problem I assume, correct? Because at some point, it would indict the lack of data points so --

MR. OLANIRAN: Objection to speculation, Your Honor.

MR. BOYDSTON: I'm asking for his opinion. It is speculation. That's right. It's his opinion I'm asking for.

JUDGE BARNETT: Overruled.

THE WITNESS: Well, at the limit, as we statisticians always like to go there, at the limit if there are zero viewing throughout, I would hope these proceedings would not take place going forward.

BY MR. BOYDSTON:

Q What if I were just a tick? What if it was just a tick below zero? I mean at some point, you would have -- of course if it was 100 percent zero viewing, of course it would be absurd. How about at some point -- is there some point less than 100 percent that you would still say it's a problem, or would you just consider

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the factor to be a problem -- not a problem ever?

A I'll repeat. If the data was such that most -- the vast majority of observations were zeros, pretty soon I think what would make more sense is to do some analysis almost by hand.

So, again, every time I get -- I receive lots of data, and there's a lot of data in this case. I roll up my sleeves with the team. Pull out the proverbial chalkboard and whiteboard, and decide what's the best approach to come up with reasonable and reliable results.

That's what I've done in this matter. I think to talk about a matter where the data might be a lot worse than here, would I do something? There could be a case where the data is worse, where I'd have to change my methodology.

Q Once again, you are opining as to the instance of zero viewing here not being a problem, despite the fact that you have not done any zero viewing specific analysis, correct?

A Well, I --

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Q Yes? Yes or no, and then you give an explanation. You have a -- you're opining that it's not a problem here. True?

A That is correct.

Q And you haven't done any zero viewing analysis, true?

MR. OLANIRAN: Objection, Your Honor. Vague.

MR. BOYDSTON: I'm repeating what you've been saying.

THE WITNESS: Again, I --

JUDGE BARNETT: Overruled.

BY MR. BOYDSTON:

Q True or false, you haven't done a zero viewing analysis? I mean we've gone over this. You said no, correct?

A I'm trying to answer your question.

Q Have you done a zero viewing analysis or not? I think the answer was yes -- I mean no.

JUDGE BARNETT: Give him the chance to answer the question.

BY MR. BOYDSTON:

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Q Have you done a zero viewing analysis?
A Let me try to answer. You always -- sometimes you can't give yes or no without context.
Q Well, at the beginning of the proceeding, we tell people to say yes or no first, and then give their explanation.
A No. And my explanation is the following: Again, as I described at length on Monday and even greater length in my direct testimonies, just the nature of the data, the fact that you were able to run the Poisson regression and the characteristics that were in the output files that Dr. Robinson had would lead me to believe that it's a reliable methodology.
MR. BOYDSTON: Your Honor, I move to strike his response after no.
JUDGE BARNETT: Sustained.
BY MR. BOYDSTON:
Q Let me ask you to take a look at your rebuttal, written rebuttal statement, page 17. Direct your attention to Table 3.

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A Yes.
Q Let me ask you -- I think I understand what this table says, but why don't you tell me in your own words what this depicts?
A My understanding is that these are programs that IPG claimed with regards to -- in the documents that we received in discovery, and these are cases -- I give an example in one of the paragraphs, The Three Stooges.
So, The Three Stooges is one in the spreadsheet that we received at footnote 20. In that spreadsheet it said that IPG was claiming Three Stooges for the years 2007 through 2009. Yet in her analysis, Dr. Robinson used -- treated Three Stooges as an IPG claimed program from the entire period 2004 through 2009.
So, what that table does is counts the number of transmissions of Three Stooges from 2004 through 2006, which is the time period where IPG did not observe a claim for that title according to that document. Yet, Dr. Robinson treated it as an IPG title. And that's the case

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where each of those titles in Table 3 for satellite there -- there's many more. That's why I cut it off. It's in all of their titles in italics.
Q And was it your understanding, or did you have an understanding that this was a coding error related to a temporal restriction to i.e. years of claims.
A I would define it as a mistake. A coding mistake, yes.
Q Now, did you run a full analysis of the coding mistake to come up with all these titles? I assume that's how you -- you get some sort of process to identify all these titles.
A Someone on my team did this one and prepared this table, yes.
Q Okay, when they did that, did they restrict it only to look for IPG titles that were subject to this airing?
A It was based upon Robinson's documents. So, therefore, yes.
Q So, did you check to see whether or

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not this error affected any MPAA titles?
A As far as I'm aware, we did not make that error.
Q Did you check for that error?
A Check for that error? With respect to Dr. Robinson do you mean? Go ahead. Ask the question.
Q You looked at Dr. Robinson's underlying data and her report and you discovered that due to a coding error, Dr. Robinson had accorded IPG credit for these programs. Did you also look to see whether or not Dr. Robinson's error also resulted in the MPAA being credited for programs outside of its temporal restrictions?
A I understand your question. The answer is there's no need to do that based upon the way she performed her analysis because she took the IPG data, excuse me, and appended the MPAA data to it that had the sort of appropriate titles and years.
So, there's no mistakes with respect

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to MPAA as far as I'm aware.
Q Did you look further into it to see if perhaps there were some mistakes that included titles for MPAA?
A My answer is the same. It's not possible. It's not possible based on my understanding of her approach.
Q How did her coding mistakes come to your attention?
A Someone on my team sort of brought it to me. So, this is what she does --
Q Someone on your team meaning --
A Worked directly with me and I supervised.
Q How did they come across it if you know?
A Actually, the specific person who found it has been working with me for about 18 years now. He works with data like a hot knife through butter. So, when he brought this to my attention, I said, "Yes, you found a mistake."
I presume he -- I presume maybe he was

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trying to replicate Dr. Robinson and have different numbers, and started looking at her code, trying to figure out why it was that the titles and years were different. That's my presumption.
But Dr. Robinson's approach is to simply append the MPAA data to the IPG data, and take -- and so, this time constraint would not take place and not interview he MPAA data.
Q Are you saying it's not possible that this coding error may have favored the MPAA? And by coding the MPAA with more transmissions outside of the proper time frame?
A That is correct. My understanding is it's not possible.
MR. BOYDSTON: Okay, that's interesting. I have nothing further.
MR. MACLEAN: Your Honor, may I have a very brief cross based on one clarification?
JUDGE BARNETT: You may.
CROSS-EXAMINATION
BY MR. MACLEAN:

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Q Dr. Gray, I apologize. It's possible I misunderstood either the question or the answer on this, but were -- I believe you were asked about your use of CBC subscriber data in your methodology.
A I may have been.
Q And did you answer that you used CBC subscriber data or fee data, fee generation data, in establishing your stratified random sample?
A I hope I didn't misspeak. I used the subscriber count to choose my samples.
Q Okay. So, you used CDC subscriber data that way. Is that correct?
A Yes.
Q Did you also use it in -- use CDC subscriber data in performing your regression calculations?
A I used the CDC data in terms of -- because there's information with respect to the number of subscribers of retransmitted stations. So, that will be in my regression as well.
Q And so, I'm just looking as an

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example, at MPAA Exhibit 6 and 7. I'm looking at -- this is only an example, but I'm looking at the top of table E-3-A. It's on page 56.
A Yes.
Q And there at the top it shows you did a regression based on market size, correct?
A Yes.
Q Is that where you used the CDC data when you calculate the log of market size?
A Correct, and market size again is the number of distinct subscribers on this station, at the program at issue at the quarter hour.
Q And Poisson regression is a logged linear regression, correct?
A That is correct.
Q So, in your regression, you used -- your top factors there are log of market size, which is the number of distant subscribers, correct?
A Correct.
Q And log of local ratings which are local ratings, correct?

A Correct.
Q And with respect to calculating these coefficients, you found a positive and statistically significant correlation between both number of distant subscribers and distant viewing, and also local ratings and distant viewing for every year. Is that right?
A That is correct, yes.
MR. MACLEAN: No further questions.
MR. OLANIRAN: I have no re-direct, Your Honor.

RECROSS-EXAMINATION

BY MR. BOYDSTON:
Q Very quickly. I can do it from here. On the subject you were just discussing, the CDC guide that you used for that, was it satellite data, or cable data or both?
A For this particular table, this was satellite, but I also used it in the cable as well.
Q So you used satellite data and cable data?

A Correct, yes.
MR. BOYDSTON: Okay, thank you.
JUDGE STRICKLAND: One question for you, do you have Dr. Robinson's rebuttal, rebuttal to the MPAA in front of you?
MR. BOYDSTON: Your Honor, may I approach and see if it --
JUDGE BARNETT: Thank you, Mr. Boydston.
JUDGE STRICKLAND: Rebuttal for the written direct statement of the MPAA.
THE WITNESS: Okay. I believe this is it, which is the -- yes, rebuttal to the --
MR. BOYDSTON: That is it. Thank you.
JUDGE STRICKLAND: Can you turn, sir, to page 8, and take a look. I want to ask you about footnote 10 in Dr. Robinson's rebuttal statement. Are you there?
THE WITNESS: I am.
JUDGE STRICKLAND: Okay, I'll ask you just a general question then give you a chance to read it. My question is she makes mention of

what she describes as core quoting from testimony of Mr. Lindstrom of Nielsen. "Huge relative errors in Nielsen data." And that is a criticism of your analysis to the extent it relies on the Nielsen data. Because of what she says, according to Mr. Lindstrom's testimony, it has huge, relative errors.
Can you respond to that? Please, feel free to read the whole footnote or any other part of that page before you answer.
THE WITNESS: There's a little bit of information that Nielsen possesses with respect to the relative errors and data at issue. Therefore, it was impossible to calculate the confidence interval, and I had to sort of employ a relatively new, developed in 1970's but now widely accepted technical bootstrap, in order to computationally calculate the confidence internal.
JUDGE STRICKLAND: You have that in the footnote in your statement?
THE WITNESS: I do.

JUDGE STRICKLAND: Okay.
THE WITNESS: And I'm happy to talk about that at length because I think it's a --
JUDGE STRICKLAND: We'd be happier that you don't.
THE WITNESS: But in this context, the only way to estimate confidence intervals, given the unknown on a case-by-case method is to simulate errors using the bootstrap methodology, and that's what I did.
JUDGE STRICKLAND: I don't want to go down this rabbit hole, but I'll take a couple little steps. Is there a lack of -- of confidence greater when you use the bootstrap methodology than if you actually have the confidence intervals from the actual data? Is that sort of a second best?
THE WITNESS: The short answer is it's actually ambiguous because there's a large literature on it now, it's an amazingly accurate tool, and a powerful tool. But it is computationally heavy. It's takes my program,

which takes approximately a week to run in.
My server has dozens of processor and lots of memory. But it does all these simulations and creates errors, and does what are called Monte Carol experiments to see how accurate the bootstrap methodology is. It's now embraced by the statistical sort of community.
JUDGE STRICKLAND: So, when you mention the bootstrap methodology in one of your statements admitted as evidence in this proceeding, was that in your direct testimony?
THE WITNESS: That was in my rebuttal testimony.
JUDGE STRICKLAND: Your rebuttal testimony?
THE WITNESS: Correct.
JUDGE STRICKLAND: And Dr. Robinson also mentioned, and I don't think it's mentioned here in the footnote that I referenced; she mentioned the existence of large standard errors as well that are the unknown -- actually, I must correct myself. "Unknown standard errors with

regard to the Nielsen data." Do you have a response to that?
THE WITNESS: My understanding is that's actually -- isn't that -- standard errors and relative errors are cut from the same cloth.
JUDGE STRICKLAND: Are you saying that they are synonymous?
THE WITNESS: Not synonymous, but I mean standard errors are measures of error with respect to the estimate. Relative errors are sort of the magnitude of it.
So, I got a standard error 0.1. It's put in context with the relative error.
JUDGE STRICKLAND: So, you're saying that the bootstrap methodology addresses both of those concerns, given that they're cut from the same cloth?
THE WITNESS: Indeed it's an attempt to address them.
JUDGE STRICKLAND: So, you're saying that bootstrap methodology substitutes perfectly for a direct determination of confidence

intervals, or it's the best alternative?
THE WITNESS: I would say it's the best alternative. It's -- it's really the only alternative that I could do straight-faced in front of my peers.
JUDGE STRICKLAND: Have you ever relied upon that bootstrap methodology to determine confidence intervals, testifying as an expert witness?
THE WITNESS: Not testifying as an expert witness, no. But I've done it in the academic community.
JUDGE STRICKLAND: Thank you.
JUDGE BARNETT: Any follow on questions from counsel based on this?
MR. MACLEAN: No, Your Honor.
MR. OLANIRAN: No, Your Honor.
MR. BOYDSTON: No, Your Honor.
JUDGE BARNETT: Thank you, Dr. Gray.
THE WITNESS: Thank you.
(The witness steps down.)
JUDGE BARNETT: It appears we have an

hour and ten minutes, and three parties. Twenty-three apiece. Twenty-three and one-third apiece. Who is on first?
MR. BOYDSTON: I presume we go in the same order.
MR. MACLEAN: My friend at MPAA has offered to yield his spot to me.
MR. OLANIRAN: What are friends for?
MR. MACLEAN: Actually, I don't believe I'll use 23 minutes. I have a little bit more to say about IPG's rehashed methodology in this proceeding.
Every factor that they rely on here is a factor that was already rejected in the 1999 case. In Mr. Boydston's opening statement, he said that IPG had brought a new idea here, and that is that copyright royalties in Canada and elsewhere use the same factors.
First of all, it appears not to be true, but based on the testimony and the plain language of the exhibits that have been offered in support of it; but true or not, I don't -- I

CERTIFICATE OF SERVICE

I hereby certify that on this 15th day of December, 2017, a copy of the foregoing pleading was provided to each of the parties listed below, either electronically via the Copyright Royalty Judges' eCRB electronic filing system for those parties receiving service through eCRB, or by Federal Express overnight mail.

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Certificate of Service

I hereby certify that on Friday, December 15, 2017 I provided a true and correct copy of the Written Rebuttal Statement Regarding Allocation Of The MPAA-represented Program Suppliers, Volume II (Prior Designated Testimony) to the following:

Devotional Claimants, represented by Benjamin S Sternberg served via Electronic Service at ben@lutzker.com

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Signed: /s/ Lucy H Plovnick